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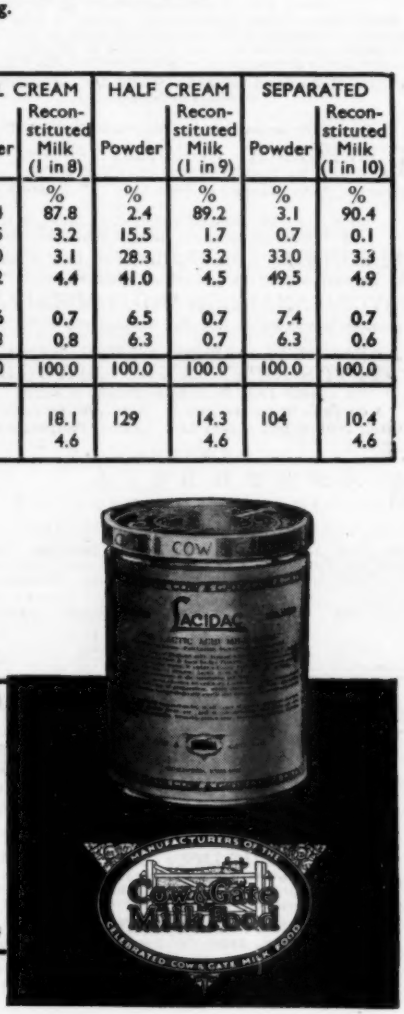

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CLINICAL AND EXPERIMENTAL OBSERVATIONS WITH NEW INSULINS

By T. Izod Bennett, M.D., F.R.C.P. Lond.
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(*From the Wards and the Diabetes Clinic, Middlesex Hospital*)

The evolution of the modern treatment of diabetes is marked by certain stepping-stones of fundamental importance. These are:—

1. "*Ladder*" *diets* devised by Dr. George Graham. The introduction of gradually increasing and balanced diets after a period of initial starvation began a new epoch by which the mortality of diabetes was greatly diminished and the general welfare of the diabetic patient notably increased.

2. *Discovery of insulin.*—This has enabled us to diminish the mortality of diabetes to a very low level even in cases of great severity; it has also reduced the mortality of diabetic coma, which was previously 100 per cent., to a relatively low figure.

3. *Introduction of high-carbohydrate diets.*—Several years ago observers in many countries discovered, almost simultaneously, that in severe cases of diabetes, controlled by diet and insulin, it often becomes possible to increase the daily ration of carbohydrate, with benefit to the patient, and without increase in the daily dose of insulin; it was even found that it was often possible to diminish the daily dose of insulin. This advance has been less fundamental than the others and has occasionally had the disadvantage of encouraging patients to eat unwise amounts of carbohydrate; it has however, when properly employed, brought increased liberty to the diabetic patient.

To these three advances must now be added a fourth in the form of certain new insulin preparations which act more slowly and over a longer period than does insulin in its original form. The parent of these insulins is the protamine insulin invented by Prof. H. C. Hagedorn of Copenhagen, and marketed in this country under the name of Retard Insulin.[1] The other new insulin marketed in Great Britain by a group of British chemical firms is known as Protamine Insulin (with Zinc) Suspension[2]; its composition may broadly be described as being Hagedorn's protamine insulin with minute amounts of zinc added to it.

A further new insulin has been widely used in North America under the name of "crystalline insulin"; this product is not at present on the British market but our observations include some made with an insulin of this type and provisionally called Zinc Crystalline Protamine Insulin[3]; this composition may be described as being ordinary insulin crystallised by zinc and subsequently combined with protamine.

[1] Leo, made by Nordisk Moulin Laboratorium, Copenhagen, and obtainable from C. L. Bencard Ltd., London.
[2] Allen and Hanburys Ltd., Boots Pure Drug Co., Ltd., The British Drug Houses Ltd., Burroughs Wellcome and Co.
[3] Made by Organon Laboratories, Oss, Holland.

BASIC PRINCIPLES OF TREATMENT

Discussion of the value, and of certain disadvantages, of these new insulins can be clarified by a brief recapitulation of the basic therapeutic principles which have governed the majority of physicians when treating diabetes during the last twenty-five years. At first, when the immense significance of the "starvation" treatment and "ladder" diets was appreciated, it was believed that if a patient with diabetes was kept constantly sugar-free the pancreas was placed in a condition of rest, deterioration was checked, and the possibility of regeneration secured. With the introduction of insulin attention became concentrated upon the sugar in the blood but the principle of pancreatic rest still governed treatment; it was often laid down that the optimum dose of insulin was that which would prevent hyperglycæmia at any time in the twenty-four hours. The astounding success of insulin gradually brought with it the conviction that this substance had a wider effect than mere chemical control of the sugar circulating in the blood; patients properly treated with insulin do not only cease to lose weight, and regain strength, they exhibit far wider physiological restoration, as may be exemplified by the disappearance of prolonged amenorrhœa in women and the reappearance of virility in men. In fact, it becomes clear that successful insulin therapy is a true "replacement" therapy akin to the treatment of Addison's disease with adrenal cortical extract. It might almost be said to-day that the correct dose of insulin in any patient with diabetes is the maximum dose that can be administered without the production of unpleasant symptoms.

But recent years have taught us that certain unpleasant symptoms resulting from hypoglycæmia form a very important factor in the lives of many patients suffering from severe diabetes. We can recall the case of a medical man who set out on his morning round in a new car and remembered nothing until he awoke in a London hospital with a badly cut head, to receive the news that his car had been found smashed to pieces in a quiet suburban road. We were recently asked to report on a bank clerk, who had at one time attended the diabetes clinic at the Middlesex Hospital, and who had just achieved notoriety by entering the manager's office in the middle of the morning where he smashed the furniture and assaulted his superior. Another bank clerk, who had been perfectly controlled with insulin in 1926, consulted us again in 1932 because he found that on several days a week he tended, at about 11 A.M., to throw the ledgers all over the office and then retire to sulk in the W.C. for half an hour. In children a condition of pronounced nervousness, irritability, and fear is often apparent at times when the effect of a previous dose of insulin is at its maximum, and almost any diabetic patient who has been on insulin for a long time will, if his confidence be secured and his very proper desire to avoid grumbling be subdued, tell his medical adviser of the dread he has of these mild hypoglycæmic attacks. The new insulins, with their slower and more prolonged action, hold promise of making it easier to reproduce the continuous secretion of natural insulin which we believe to be the physiological condition, and to diminish this risk of frequent hypoglycæmia, mild or severe, which is so much dreaded by the diabetic patient.

Comparison with Ordinary Insulin

Table I sets out briefly the varieties and times of action of the insulins at present available in Great

Britain. From this it is clear that the essential difference between the various insulins lies in their rate of action. All of the new insulins here are, when used, suspensions of ordinary insulin combined with protamine, the zinc insulins containing zinc in addition. All these insulins act much more slowly than ordinary insulin, and it is believed that this is due to the fact that they remain for a long time in the subcutaneous tissues, where they are broken up and slowly absorbed into the blood stream as ordinary insulin. The zinc products are far more slowly absorbed than the pure protamine insulin. Whether there is any further distinction between the action of the English zinc protamine insulins and the Dutch crystalline protamine insulin we are not yet in a position to say with certitude. Table II sets out briefly the advantages and disadvantages of the different products. In this table it has been necessary to place all the zinc insulins together, though later observations may make it necessary to separate them as regards their effects.

TABLE I

Types of Insulin

Type of insulin.	Synonyms.	Commencement of action.	Maximum effect.
Ordinary insulin.	—	20–40 min.	3 hrs.
Insulin retard.	Protamine insulin; Hagedorn's insulin.	1–3 hrs.	6–8 hrs.
Zinc insulin.	Protamine insulin (with zinc) suspension.	9–11 hrs.	15–20 hrs.
Zinc crystalline protamine insulin.	Protamine-insulin Organon.	8–12 hrs.	12–20 hrs.

TABLE II

Advantages and Disadvantages of Different Types

Type of insulin.	Advantages.	Disadvantages.
Ordinary insulin.	Constant in effect, invaluable in coma, available in many strengths.	Transient effect, multiple doses often needed, liable to produce frequent brief hypoglycæmia.
Insulin retard.	More prolonged effect, painless on injection, controls early morning hyperglycæmia, never more than two doses required daily.	Effect somewhat erratic, occasional severe hypoglycæmic effects, bulky to administer in large doses, occasional difficulty in controlling glycosuria before lunch.
Zinc insulin and crystalline protamine insulin.	Still more prolonged effect, will often control even a severe case with one injection daily.	Effect somewhat erratic, may produce unexpected and very prolonged hypoglycæmia, bulky to administer in large doses.

It remains to be said that of the new insulins, insulin retard is supplied in boxes containing five bottles of the insulin and one bottle of buffer solution, a small amount of the latter having to be added to each bottle of the insulin before it is used; the addition of the buffer throws down a precipitate and until this is done the product acts exactly as ordinary insulin. A buffer solution is also supplied with crystalline protamine insulin, but in this case the buffer is attached to each bottle of insulin in a separate chamber from which it can be mixed with the insulin before the bottle comes into use. This has the advantage of obviating an essential but not altogether[8] trivial measurement by the patient. The English protamine insulin (with zinc) suspension is supplied mixed as a suspension which, it is claimed, remains potent for six months. Each bottle is dated and it remains to be seen whether the claim of the manufacturers that their product remains stable for so long a period is justified.

HAGEDORN'S PROTAMINE INSULIN (INSULIN RETARD)

In a previous communication two of us (Bennett and Gill 1936) reported the excellent effects obtained by means of protamine insulin in the treatment of severe diabetes in children. Further experience enables us to confirm all that was said in that paper; the children are more easily kept sugar-free, often only require one daily dose of insulin, rejoice in the painlessness of the injections, and are observed to be in better health and less subject to attacks of mild hypoglycæmia. We have seen no ill effects from the use of this product except that one of these children was brought into hospital in hypoglycæmic coma as the result of having accidentally given his injection direct into a vein. The administration of intravenous saline with glucose quickly restored him and he was in his usual health within a few hours. It is to be noted that all the new products, if administered intravenously, act with the same speed and in the same degree as a corresponding dose of ordinary insulin. An attack of hypoglycæmia arising in this manner will therefore be exactly similar to one arising from the result of such an accident when ordinary insulin is used. Severe hypoglycæmia following the *subcutaneous* administration of one of the new insulins may, however, be more serious than the hypoglycæmia of ordinary insulin. We have not met with such an event with protamine insulin but further reference will be made to the subject when discussing the zinc insulins.

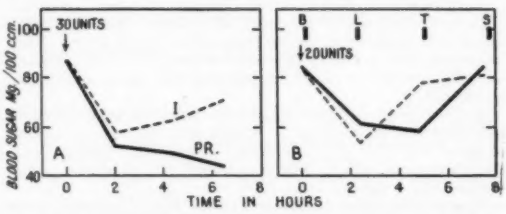

FIG. 1.—Comparison between ordinary insulin and protamine (retard) insulin in a normal man. In the fasting man the curves show rapid recovery from effect of ordinary insulin, but protamine (retard) insulin still acting 6 hours after the injection and producing hypoglycæmic attack. On a fixed diet the curves show the effect of ordinary insulin "buffered" by lunch, but protamine insulin continues to act strongly until its action is "buffered" by tea.

Fig. 1 illustrates the effect of protamine insulin on the blood-sugar. It shows the curves of blood-sugar in a normal man, in one fasting, in the other on a fixed diet, after an injection of this substance.

This effect is seen in the fasting subject after the injection of 30 units, and it will be noted that at the end of a few hours the effect of the ordinary insulin has quite passed off whilst the protamine insulin is acting more and more strongly at the end of six hours; sweating, giddiness, and general mental disturbance proclaimed the advent of pronounced hypoglycæmia and glucose had to be rapidly administered to the patient, the blood-sugar having now fallen to 45 mg. per 100 c.cm. The curves with a fixed diet show the comparative effect of the two insulins given before a series of small spaced meals. Two hours after breakfast the ordinary insulin has produced the greater effect but lunch soon counteracts this, whereas

the protamine insulin is only reaching its maximum at five hours after its first administration.

We have now been using retard insulin for many months, both for children and for serious cases of diabetes in adults. In a certain number of cases we have been able to establish stability with a single daily injection given before breakfast, but in the majority it has been necessary to give a dose at night as well, and as the effect of this second dose has almost entirely ceased by breakfast next morning, when the

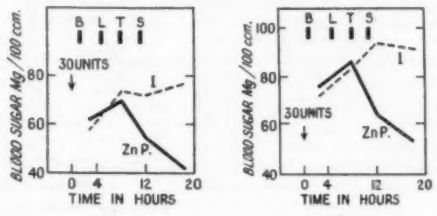

FIG. 2.—Comparison between ordinary insulin and protamine insulin (with zinc) suspension, the latter acting powerfully 18 hours after injection. (Normal man on a fixed diet.)

FIG. 3.—Comparison between ordinary insulin and zinc protamine crystalline insulin. Zinc protamine crystalline insulin acting strongly 18 hours after injection. (Normal man on a fixed diet.)

morning dose has not yet begun to act, it is not unusual to observe a transient glycosuria for one or two hours after breakfast. For this reason certain observers have advocated the addition of a little ordinary insulin to the morning dose, but we feel that any possible advantage of this procedure is probably outweighed by the danger of obliging a patient to employ two different brands of insulin, each requiring careful measurement. It must also be noted that some of the chemists responsible for the manufacture of the new insulins stress the importance of great accuracy in the *p*H of the substances when used, and mixture of two products will tend to upset this. While it is perhaps doubtful whether such extreme exactness is of great importance we have no evidence that any real ill effect follows a transient hyperglycæmia which is only present for a very short period after breakfast.

The following illustrative cases may be cited:—

CASE 1.—*Dose unchanged. Reactions abolished.* Female aged 29. Severe diabetes of eleven years' duration. Sugar-free on 32 units of ordinary insulin morning and 28 units evening. Frequent and rather severe hypoglycæmic reactions. *Result.*—Now sugar-free on protamine (retard) insulin 32 and 28 units. Only two mild reactions in many weeks.

CASE 2.—*Dose reduced to one a day.* Male aged 36. Mild diabetes for two years. Sugar-free on ordinary insulin 14 and 10 units. No reactions. *Result.*—Now sugar-free on one daily dose of 26 units protamine (retard) insulin.

CASE 3.—*Failure to secure stabilisation.* Female aged 39. Severe diabetes for eleven years. Sugar-free on 20 units ordinary insulin for each of three main meals. Frequent hypoglycæmic attacks. Changed to protamine (retard) insulin, 40 units morning, 20 units evening. *Result.*—Reactions abolished but has frequent glycosuria both morning and afternoon.

CASE 4.—*Morning glycosuria abolished.* Male aged 37. Severe diabetes ten years. Complicated by pulmonary tuberculosis now quiescent. Constant early morning glycosuria on ordinary insulin 40 and 25 units. *Result.*—Now continuously sugar-free on protamine (retard) insulin 44 and 30 units. *Comment.*—The pulmonary complication made it important to secure complete control in this case; it is, however, to be noted that with active pulmonary tuberculosis, and with varying and very low tolerance, ordinary insulin, with its rapid and constant action, is to be preferred to the slower insulins.

CASE 5.—*Constant glycosuria abolished; total dosage reduced.* Male aged 66. Severe diabetes five years. Glycosuria never properly controlled on ordinary insulin 40 and 36 units. Occasional hypoglycæmic reactions. *Result.*—Now continuously sugar-free on protamine (retard) insulin 38 and 20 units. Occasional slight hypoglycæmia.

PROTAMINE INSULIN (WITH ZINC) SUSPENSION AND ZINC CRYSTALLINE INSULIN

Both these insulins act more slowly and for a longer period than does protamine insulin (retard). Figs. 2 and 3 show the effect of an injection of 30 units of these insulins on the blood-sugar of normal individuals taking four fixed meals; it will be seen that the normal increase in blood-sugar is converted into a sharp decline which begins to be apparent only after eight hours and is approaching its maximum at about eighteen hours after the administration of the insulin. Owing to this extreme delay it is often possible to achieve stability even in severe cases of diabetes by employing a single daily dose of one of these substances; the following are illustrative cases:—

CASE 6.—*Incipient coma; stabilised with a single daily dose.* Female aged 16. Severe diabetes, two months' duration. Admitted to hospital in incipient coma, relieved by massive doses of ordinary insulin. She was placed on a ladder diet and gradually built up to 120 C, 100 P, 150 F, discharged on this diet, with 26 units of protamine insulin (with zinc) suspension before breakfast. *Result.*—She has remained well and stable for two months.

CASE 7.—*Heavy ketosis; stabilised with single small evening dose.* Female aged 11. Admitted with heavy ketosis and uncontrolled glycosuria. Six weeks' history. Controlled with ordinary insulin; gradually built up on ladder diet with substitution of protamine insulin (with zinc) suspension. After fourteen days in the ward she

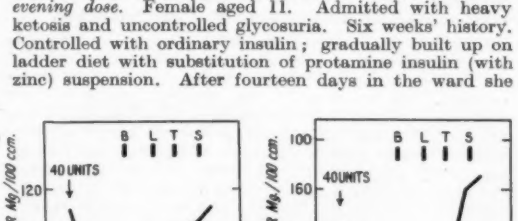

FIG. 4.—Blood-sugar observations from Case 7 taken when stability was first achieved.

FIG. 5.—Blood-sugar curves from a case somewhat similar to Case 8. Female aged 53. Zinc protamine crystalline insulin 40 units given at 9 P.M.—i.e., two hours after supper. Only fair control of blood-sugar and total daily carbohydrate low (60 g.). Distribution of carbohydrate: breakfast 35 per cent.; lunch 35 per cent.; tea 20 per cent.; supper 10 per cent.

was sugar-free and symptomless on a single evening (9 P.M.) injection of 40 units (Fig. 4). During the next week this dose was reduced to 32 units and the patient was discharged from ward. *Result.*—Now attending out-patients and dose is only 16 units. There have been three slight reactions at about 2 A.M.

But against apparently brilliant successes of this kind must be set a number where this is qualified by the necessity to employ more than one type of insulin.

CASE 8.—*Stability on two doses of ordinary insulin; failure to control with single dose of zinc insulin.* Female aged 55. Severe diabetes of two years' duration. Sugar-free on 18 units of ordinary insulin night and morning

but subject to occasional severe hypoglycæmic attacks when taking much exercise in the mornings. Very desirous to get on to a single dose of insulin. Three weeks' careful treatment in hospital failed to achieve this but at the present time she is well on 36 units of protamine insulin (with zinc) suspension, given every evening at 8.30 P.M.; on this she usually shows glycosuria between 10 A.M. and 1 P.M., which can be controlled by giving 6–10 units of ordinary insulin before breakfast. It is felt that the present position is probably preferable to the previous situation, because this patient is not very intelligent and was irregular in her meals and times of administration of ordinary insulin; there is now much less risk of hypoglycæmia and she has greater liberty in that the exact hour of the evening dose does not very much matter; it remains to be seen whether it is necessary for her to take the morning dose of insulin.

Risks of Hypoglycæmia

The risks of severe hypoglycæmia owing to cumulative or to delayed effect must be borne carefully in mind. When a patient on one of the very slow insulins develops hypoglycæmia, it is apt to appear only when the blood-sugar has fallen to a very low level. With ordinary insulin a hypoglycæmic attack is the result of a sharp and rapid fall in the blood-sugar level; with zinc insulins the advent of hypoglycæmia is so gradual that it sometimes produces symptoms only when the blood-sugar has reached a dangerously low level. Further, it must be noted that hypoglycæmia with ordinary insulin tends to be a transient phenomenon from which the patient often emerges without special treatment, and is susceptible to rapid correction by an injection of adrenaline or the administration of a little glucose. With the zinc insulins, on the other hand, hypoglycæmia will tend to be prolonged and treatment may have to be continued over several hours before safety is re-established.

CASE 9.—*Severe hypoglycæmia threatening life.* Female aged 23. Severe diabetes for three years, stabilised and well on ordinary insulin 25 units morning, 10 units evening. Twelve months ago married, neglected her diet and omitted evening insulin. Recently admitted to the Middlesex Hospital, pregnant three months, incipient coma and uncontrolled diabetes. She became practically stable with occasional positive urine tests on 1750 calories, including 100 C, with 66 units zinc crystalline insulin at 6 A.M. One slight hypoglycæmic attack at 11 A.M. (blood-sugar 68) on 70 units. On 66 units there were no signs of hypoglycæmia until she had been taking this dose for seven days; on the seventh day she was given her 66 units at 6 A.M. and ate her usual meals; twenty-two hours later, at 3.30 A.M., a night nurse reported that she was noisy and incoherent and disturbing the ward. The night nurse erroneously interpreted this as hysteria, and half an hour later she was quiet because of deep coma and was found to be cold and almost pulseless. Adrenaline was administered without effect and 10 grammes of glucose given intravenously; she became partly conscious and vomited, glucose was administered by mouth, but vomiting continued and the patient was dangerously ill until 5.30 A.M., when recovery gradually became complete. The blood-sugar at 3.30 A.M. was 38 mg. per 100 c.cm.

The patient is now being treated with protamine insulin (retard), and is approaching stability on 16 units in the morning and 22 in the evening.

This case illustrates the potential dangers of the new insulins *We are strongly of opinion that great caution must be observed in their use when a dose exceeding about 30 units is required.* When protamine insulin (with zinc) suspension was first put on the market one of us (T. I. B.) wrote a warning in the medical press, and subsequent experience convinces us that this warning was more than justified. A death from hypoglycæmia after the administration of a large dose of one of these insulins has occurred in Great Britain, and although we have no personal experience of such a catastrophe the case recorded above was one causing great anxiety for some hours.

CASE 10.—*Severe diabetes controlled with single injection of 88 units of zinc insulin; treatment changed on account of danger.* Female aged 17. Severe diabetes of 18 months' duration. On ordinary insulin 32 and 28 units showed variable glycosuria with frequent hypoglycæmic reactions. On protamine insulin (retard), 40 and 32 units, reactions were abolished but glycosuria constant. Next on 38 units of ordinary insulin in the morning and 36 of protamine insulin (retard) in the evening she was sugar-free but still had rather frequent hypoglycæmic attacks. She dreaded multiple injections. She was re-stabilised on zinc protamine crystalline insulin, 88 units before breakfast. Only very small hypoglycæmic reactions occurred, usually in early morning before breakfast. Blood-sugar estimations showed constant hyperglycæmia without glycosuria (Fig. 6). Single doses were abandoned on account of potential danger. *Result.*—Now sugar-free and without hypoglycæmic attacks on 32 units of ordinary insulin before breakfast and 60 units of zinc protamine crystalline insulin before tea. This patient is being kept under very careful observation.

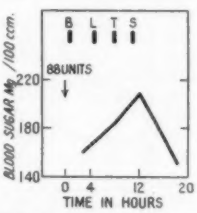

FIG. 6.—Severe diabetic, with high renal threshold, sugar-free on one injection of 88 units of zinc protamine crystalline insulin.

Psychology of the Patient and its Bearing on Treatment

Patients with diabetes mellitus fall into two broad but important classes—young diabetics in whom diabetes is the predominant feature of the situation and is severe, and middle-aged or elderly diabetics in whom the disease is complicated by the presence of arterial degeneration and in whom this latter feature is usually the dominating factor, the diabetes being easy to control. In both these classes psychology plays an important part in that the patient is the victim of an incurable disease that can almost invariably be kept under control, provided that the patient has the intelligence and knowledge necessary for proper collaboration with his medical attendant. But the knowledge that the disease is incurable and that the patient is obliged to exercise perpetual discretion concerning diet is a heavy handicap, and until discipline has merged into habit this must have a depressing effect. A further psychological burden is imposed upon the diabetic patient by the well-meant advice which he or she is constantly receiving from friends, who advocate changes of diet, patent foods, changes of medical attendant, and other things which are so easily urged upon someone other than one's self.

The introduction of a series of new insulins may prove a curse to a large number of diabetics who are at present being successfully treated without the use of these innovations. It must be clearly stated that the diabetic patient who has for some time been maintained in excellent health, without alarming variations in weight, and without much glycosuria or attacks of hypoglycæmia, should be advised to keep to his present treatment. The new insulins offer him no great advantage. When, on the other hand, such a patient finds the administration of multiple doses a serious burden, or when he has been subject to frequent hypoglycæmic attacks, the substitution of one of the slower insulins may prove to be a very real boon.

It must not be assumed, however, that it is a simple matter to change a patient over to one of the slower

insulins. In milder cases where the total daily dose of ordinary insulin does not exceed 30 or 40 units it can often be achieved in the out-patients' department without great difficulty, but when the case is more severe the change must be carried out in a hospital or nursing-home, with most careful control of the diet and daily observations of the urine. When stabilisation is accomplished or approaching great care should be taken to see that the patient is taking plenty of exercise, and a few estimations of the blood-sugar, specimens being secured at an appropriate time after the administration of the insulin, should be made in order to be sure that "masked hypoglycæmia" is not present.

In cases where an evening dose of zinc insulin renders the patient sugar-free except for a brief period after breakfast it is often easy to control the morning specimen by a small injection of ordinary insulin; but we are not satisfied that such a patient has derived real benefit because he is still receiving two injections daily and carries the risks inherent in the employment of two very different substances.

A survey of recent publications dealing with the treatment of diabetes reveals the interesting fact that many American observers have joined their British colleagues in believing that the successful treatment of diabetes must be simple. Complicated diets and the employment of more than one type of insulin in any patient are the antithesis of simplicity and we remain convinced that the requirements of the diabetic patient cannot be met by a complex treatment.

Conclusions

(1) Extensive clinical trial has now been made with protamine insulin (retard) and protamine insulin (with zinc) suspension. Experimental trial has been made with zinc crystalline insulin.

(2) These observations confirm the slower action of the new insulins as compared with ordinary insulin, the maximum effect of protamine insulin being usually 6 hours after administration, whilst that of the zinc preparations, including the "crystalline" product, is often about 18 hours.

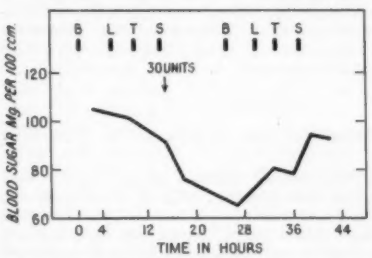

FIG. 7.—Repeated blood-sugar observations on a normal man on a fixed diet, before and after injection of 30 units of zinc protamine crystalline insulin, showing return of blood-sugar to its pre-injection level in about 24 hours.

(3) The effect of the zinc insulins wears off completely in 18-24 hours. We are unable to confirm the suggestion that cumulative effects may occur—i.e., the prolongation of action beyond 24 hours (Fig. 7).

(4) It is often possible to reduce the number of daily injections of insulin from multiple doses to a single dose when these slower products are employed.

(5) The protracted action of the new products carries with it the danger of prolonged hypoglycæmia, unless great care is observed.

(6) It is unwise, in the present state of knowledge, to substitute one of the new insulins for ordinary insulin unless there is valid objection to multiple doses or frequent tendency to hypoglycæmic attacks owing to the too rapid effect of ordinary insulin.

(7) The new insulins, owing to variation in the rate of absorption or other causes, tend to vary in their effects from day to day, and even if this variation is not of cardinal importance it is liable to have a bad psychological effect on the patient.

(8) At the present time, in cases where it is desirable to employ one of the slower insulins, protamine insulin (retard) is probably the safest preparation available.

Our thanks are due to our colleagues in the Courtauld Institute of Biochemistry for blood-sugar analyses here recorded. We also wish to thank the manufacturers of Leo Insulin and the proprietors of the Organon Laboratories for supplying us with insulin for experimental purposes. We would further acknowledge the constant help we have received in our work from Miss V. Scott-Carmichael, the lady dietitian to the Middlesex Hospital.

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PERICARDIAL RESECTION FOR CONSTRICTIVE PERICARDITIS

REPORT OF A CASE APPARENTLY CURED

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(WITH ILLUSTRATIONS ON PLATE)

Churchill in 1929 collected 36 cases of pericardial resection for constrictive pericarditis, and added one of his own. More recently (1936) he has published 9 others. Paul White (1935) published a full account of the disease in his St. Cyres lecture, giving clinical details of some of the cases operated on by Churchill. Most of Churchill's collected cases came from Germany, notably those reported by Volhard, Schmieden, and Fischer. In 18 of the 36 the result was excellent, in 4 there was transitory improvement, in 2 there was no improvement, and in 7 the operation was fatal, In the remaining 5 the operation was not completed. Among Churchill's own 10 cases there were 6 cures and 1 death, the remaining 3 showing marked improvement. In the discussion on Churchill's later paper Blalock reported 8 operations with 3 cures, 2 improvements, and 3 deaths. Other surgeons in America have reported single cases, some successful, some not. The only case reported in this country which I have found is that of Roberts and Wilson (1936). The absence of others suggests that either the disease is not being diagnosed or the value of surgery is not recognised. The results that have been published show that about half the patients are cured. This is at least encouraging in view of the severity of the disease and the magnitude of the operation.

The following is an account of a case in which, as in others on record, diagnosis and treatment were long delayed. That operation should have succeeded completely some seven years after the onset of ascites seems to show that the very long period during which its activity was severely restricted had left the heart undamaged.

HISTORY OF ILLNESS

The patient, a female, was first admitted to University College Hospital in September, 1929. She was then aged 13 and gave a history of progressive enlargement of the abdomen for three months. There was no preceding illness and no other symptoms except slight discomfort from the swelling. She had had measles at the age of 8 and whooping-cough at the age of 6, neither illness being attended by any complications. She had never had rheumatic fever or chorea; there was no family history of tuberculosis.

At the time of her first admission she was a normally developed, well-nourished girl, 7 st. in weight. The abdomen was distended with fluid, the girth 2 in. above the umbilicus being 34·5 in. The liver was enlarged to three fingers-width below the costal margin, its surface being smooth. The spleen could not be felt. Distended veins were noted in the flanks and axillæ. Nothing abnormal was found on clinical examination of the heart. Percussion note was impaired and breath sounds weak at both bases. There was no œdema of the legs or face. The blood count was normal and the Wassermann reaction negative. The radiologist reported that both sides of the diaphragm were high, appearing to compress the heart, and there were increased shadows through both lung fields. Abdominal paracentesis yielded 10 pints of clear brown fluid which contained leucocytes, lymphocytes, and endothelial cells, and was sterile on culture. A guinea-pig was inoculated with the fluid and six weeks later showed no evidence of tuberculosis. Paracentesis was repeated after four weeks, 8 pints being withdrawn. During her stay in hospital of 107 days the temperature varied from 97° to 99° F., the average being subnormal. The pulse-rate at first varied from 99 to 100, but later fell to 80 to 90. The blood pressure varied between 100 and 120 (systolic). The daily output of urine varied from 16 to 56 oz., but was seldom more than 30 oz. No diuretics were given. Blood and albumin were found on admission, but subsequently disappeared. The blood-urea was 14 mg. per 100 c.cm. The diagnosis made at this time was cirrhosis of the liver, and at the time of her discharge the patient was much relieved.

The subsequent history of the patient is one of repeated admission to hospital until September, 1935, when the diagnosis of constrictive pericarditis was made by Dr. L. P. E. Laurent. Some idea of her disability may be gained from the following facts. During six years she had been admitted to hospital thirty times, spending in all nearly three years there. She has been tapped forty-two times, a total of 402 pints of fluid having been withdrawn. The maximum girth attained was 40 in. The following observations are extracts from the notes made during her various periods in hospital.

In May, 1929, the tip of the spleen was palpable and remained so; no progressive enlargement was observed.

In October, 1930, the legs began to swell. Subsequently there was a variable amount of œdema sometimes so much that the knees could hardly be flexed.

In January, 1932, there was said to be no pulsation in the cervical veins. Previous observations on this point are not recorded.

In June, 1933, omentopexy was performed. At operation the liver edge was felt to be smooth and there was some thickening of the root of the mesentery. A small umbilical hernia was present at this time.

In December, 1933, the swelling of the legs was less troublesome, but repeated abdominal paracentesis was still necessary.

In November, 1934, venous pulsation was observed in the neck to 7 cm. above the manubrium.

In January, 1935, the umbilical hernia was repaired. The site of the omentopexy was examined and the omentum was found to be atrophic, the adhesions consisting of a few strands only about ¼ in. in diameter. During this admission the urine output was recorded over a long period. A tendency to diminish had been noted on previous admissions. During 98 days the lowest daily output recorded was 3 oz., the highest 28 oz. Urea, 6 grammes three times a day, made no appreciable difference.

In September, 1935, the patient complained that in addition to her previous symptoms her eyelids were puffy in the morning. X ray examination of the chest was repeated and the radiologist reported as follows: "Diaphragmatic movements free, diaphragm high on both sides, costophrenic angles clear. Increase in transverse diameter of heart, perhaps due to high diaphragm. Right supracardiac shadow increased. Normal pulsation. Some increase in vascular markings in lung fields. Large calcified plaque on left side near left border of cardiac shadow, ? calcification in pericardium" (Fig. I on Plate). Subsequently it was shown in oblique radiograms that the calcification surrounded the heart in the form of a ring (Fig. II on Plate). An electrocardiogram showed inversion of T wave in lead 3 but was otherwise normal. The diagnosis of constrictive pericarditis having been made operation was advised, but was postponed on account of respiratory infection at the suggestion of Dr. J. W. McNee, under whose care the patient then was.

At the time of the patient's transfer to the Surgical Unit the following observations were made.

She was a well-developed healthy looking girl aged 20, 5 ft. 1 in. in height, and 9 st. 1½ lb. in weight. The maximum circumference of the abdomen was 36½ in., this and the weight being measured shortly after paracentesis. There was no œdema of the face, legs, or sacrum, but the abdomen was distended and contained free fluid. The liver was palpable three fingers-width below the costal margin. It was smooth and did not pulsate. There was no recurrence of umbilical hernia. No apex-beat was palpable, but there was systolic retraction of the precordium, with a sharp diastolic recoil. The left limit of cardiac dullness was 7·5 cm. from the midline in the fifth space, the right limit was in the midline. The heart sounds were normal and no adventitious sounds were heard. There was distension and pulsation of the veins of the neck to the level of the angle of the mandible when the patient was sitting upright in bed. The pulse was regular in rate, its volume diminished on inspiration. The pulse-rate varied from 80 to 95. Since the first admission the rate had always been a little above normal. The daily output of urine was still low.

OPERATION

Pericardial resection was performed on Jan. 7th, 1936.

Anæsthetic, intratracheal nitrous oxide, oxygen and ether. Incision T-shaped (see Fig. III). The sternum was divided transversely at the second intercostal space and the lower part was split longitudinally, the xiphisternum being excised. The second intercostal space was opened on either side of the sternum as far as the internal mammary vessels. The two sides of the sternum were retracted and a few adhesions between the pericardium and the chest wall were divided. The pleuræ were stripped from the pericardium without much difficulty, the left being opened by a small tear which was sutured forthwith. The surface of the pericardium was white and glistening, except where adhesions to the pleura and chest wall had been divided. The pericardium appeared thick and inelastic and many calcified plaques were palpable, the largest being round the base of the heart.

The pericardium was opened anteriorly and a plane of cleavage between the visceral and parietal layers was easily found. Stripping in this plane was carried over the left border of the heart and then to the right, then up to the base, and finally round the apex on to the posterior surface. As soon as the pericardium was widely opened the heart began to fill better and bulged through the opening. The constricting effect of the pericardium was shown by a few fibrous bands left after the main stripping; these

made deep furrows in the bulging heart, which expanded still further after their removal. At the base of the heart there was a dense ring of calcified material closely adherent to the auricles. On the right side this ring was severed and a segment about 1 cm. square was excised. On the left side the pericardium was stripped to a higher level and another segment of the calcified ring about 2·5 × 1 cm. was excised piecemeal. Access to the base of the heart was a little difficult and was obtained by traction on the reflected flap of pericardium which was not cut away until the stripping at the base had been carried as far as seemed safe. The greater part of the calcified ring was left but two complete gaps were made in it, one on each side. The inferior caval opening was next exposed and all adhesions round it divided. A sickle-shaped band running backwards from the front of the heart to the diaphragm appeared to pull the caval opening forward. This was divided and partly excised. There was calcification round the orifice apparently in the wall of the vein itself, and it was thought unwise to attempt its removal. Stripping was next continued round the apex and posterior surface of the heart until the ventricles were quite free. Two strong bands fixed the apex to the diaphragm. On the posterior aspect could be felt the continuation of the calcified ring in which two gaps had been made anteriorly. Only the anterior part of the pericardium was actually excised.

At no time did the procedure appear to embarrass the heart, even when strong downward traction was made to obtain access to the base. The pericardium was washed out with saline and the wound closed with drainage at the lower end, the two halves of the sternum being held together with encircling sutures of catgut passing through the intercostal spaces. The operation lasted 2¼ hours, and at the end the pulse was 108, regular and of good volume.

The largest piece of excised pericardium is shown in Fig. IV. It was in places as much as 5 mm. thick. Microscopic examination showed fibrosis and calcification, but no evidence of tuberculosis.

POST-OPERATIVE COURSE

The patient recovered rapidly from the operation. The tube was removed after 24 hours. The wound was painful for several days, pain being aggravated by movements of the divided sternum. A week after operation there was observed a strong diffuse systolic impulse in the precordium, the divided sternum allowing more movement than normal. No spontaneous diuresis occurred and the distension of the abdomen remained unchanged. For six weeks the daily output of urine only once exceeded 20 oz. On Jan. 23rd, 1936, paracentesis was performed, 17 pints being withdrawn. This was repeated on Feb. 4th, 9½ pints being withdrawn. On Feb. 19th, in view of the continued low urinary excretion, 6 grains of Theocin was given and this dose was repeated on three succeeding days. There followed a marked increase in excretion. Administration of theocin was therefore repeated and continued until nine weekly courses had been given.

Paracentesis was performed for the last time on March 31st, 2 pints only being withdrawn. The girth was now 33¼ in. A light rubber belt was fitted and the patient was discharged on April 17th, 1936, since when she has remained well and able to work.

Her girth remains fairly constant, being 32½ in. on March 1st, 1937. Her weight at this time was 9 st. As Fig. III shows, there is redundancy of the skin of the abdomen, and irregularity due to the scars of the previous operations. At the present time, a year after operation, there has been no recurrence of abdominal distension or œdema of the feet. The manubrium and body of the sternum have not united, being separated by a gap of about 1 cm. Free movement occurs at this point with respiration and with the heart beat. The two halves of the sternum are also apparently ununited and are slightly depressed in the midline. The precordium moves with the heart beat as if it were floating on the heart, the upper part coming forward in diastole, the lower in systole. A feeble venous pulsation is visible in the neck to 2 cm. above the manubrium when the patient is sitting upright, but the veins are not visibly distended. The blood pressure is 140 systolic, 60 diastolic. There are many previous observations on the blood pressure, but it is doubtful whether they are reliable. The highest pressure recorded before operation was 128, the average being about 110.

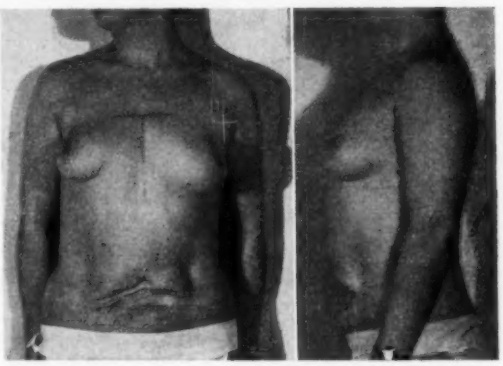

FIG. III.—Patient after operation showing scar of the incision for pericardial resection.

Further X ray examinations have been made since operation. On Feb. 26th, 1936, there was little change, except that the breach in the ring of calcification was visible. The diaphragm was still elevated. On Sept. 10th the diaphragm was one space lower on each side, the heart shadow being correspondingly increased in vertical diameter and slightly diminished in transverse diameter (Fig. V on Plate). On Feb. 1st, 1937, no further change was apparent, and there has been no visible increase in the calcification.

COMMENTARY

In spite of the long period during which severe symptoms were present in this case, operation has given the patient complete relief. It has been thought that in long-standing cases the heart might suffer from the extra strain suddenly thrown on it by increased filling in diastole following removal of the pericardial constriction. No evidence of this has appeared in my case.

With regard to operative exposure of the heart there is a difference of opinion as to the best approach. Churchill and Schmieden (1926) both recommend resection of anterior ends of ribs, costal cartilages, and part of the sternum on the left side. The sternum-splitting method has been little used and the American surgeons are disposed to reject it as apt to cause shock. Beck and Griswold (1930) from an experimental study of constrictive pericarditis in dogs concluded that exposure and liberation of the inferior caval opening is very important, and in a case which they reported expressed dissatisfaction with the left-sided exposure. Should there be extensive extrapericardial adhesions a rib resection over the heart might be of value, as in the Brauer operation, but for actual exposure of the heart the sternum-splitting method seems more satisfactory. A possible objection to this method is suggested by the depression of the sternum that has recently developed in my case. In the discussion on Beck and Griswold's paper Alexander reported two cases in which depression of the sternum following injury was associated with severe pain and dyspnœa, which he attributed

to pressure on the heart. Both were relieved by operation, in one the sternum being elevated, in the other partly excised.

The removal of the constricting pericardium presented no great difficulty except at the base of the heart and round the inferior caval opening, where there was calcification. As recommended by Schmieden

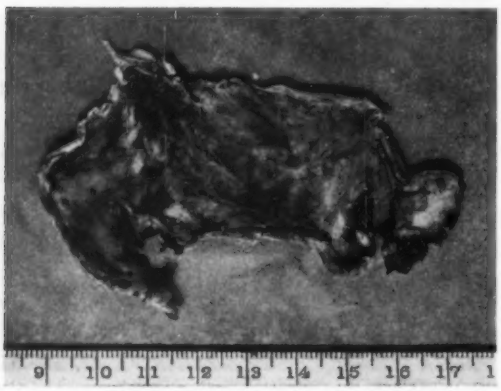

FIG. IV.—Largest piece of pericardium excised at operation (cm. scale).

the left ventricle was cleared first. He states that liberation of the right before the left may result in a sudden overburdening of the former, and he attributed one operative death in his series to this accident. Some disappointment was felt at the failure to deal with the calcified plaques round the base of the heart and the inferior caval opening, but the danger of tearing the heart seemed too great if more were attempted. It was clear, moreover, that liberation of the ventricles had already increased the filling of the heart and it was therefore possible that in spite of the calcification there was no serious constriction of the venous inlets. It must always be difficult to decide how much liberation of the heart is necessary to give relief. Lilienthal (1930) reported a case in which he was unable to strip the pericardium and did little more than make two incisions into it, one of which entered an auricle. In spite of this limited procedure the patient was relieved.

After operation further disappointment was felt at the persistence of ascites. There was no spontaneous diuresis such as occurred in the six successful cases reported by Paul White, and it was several weeks before the benefit of the operation was apparent. Schmieden mentions the difficulty that may occur in ridding the patient of the excess of fluid, especially from œdematous lower limbs. Theocin appeared to give the necessary stimulus in this case, and after its administration only one small paracentesis was necessary. Since her discharge from hospital the patient has had no treatment.

The important factor in this case seems to have been the constriction of the ventricles by the thickened pericardium preventing adequate filling of the heart. The band holding the heart down to the diaphragm may have narrowed the inferior caval opening by distortion. The persistence of calcification round the caval opening and the base of the heart does not seem to have detracted from the value of the operation.

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(*Continued at foot of opposite column*)

CYSTS OF THE NASOPALATINE CANAL

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(WITH ILLUSTRATIONS ON PLATE)

Synonyms:— Median Anterior Maxillary Cyst; Supernumerary Paranasal Sinus.

ROUTINE skiagraphic examination of the teeth has brought to light the prevalence of cystic enlargement of epithelial remnants in the nasopalatine canal. For the most part, unless they become infected, these cysts are symptomless, for they cause no local pain and only occasionally become large enough to bulge through the surface of the bone. The ætiology is unknown. They are commonly seen in apparently healthy mouths, and they are distinct from dental cysts originating from the epithelial rests in the periodontal membranes of the incisor teeth, with which in fact they have no connexion.

INCIDENCE

Although these cysts are seldom recorded they are not uncommon. Mayer, who in 1914 first reported one of them, subsequently (1931) dissected 600 cadavers and found an incidence of 1 in 66, and in a skiagraphic study of living adults found 1 in 100. It is probable that the cysts are often seen but not recognised, especially when small. Their main importance lies in the risk of subsequent infection, when they cause both pain and focal toxæmia, or in misdiagnosis resulting in needless extraction of perfectly sound central incisor teeth. When small, they may be overlooked entirely, or may be mistaken for merely large anterior palatine fossæ. Their pathogenic importance—if any—when uncontaminated has not been assessed.

MORBID ANATOMY AND HISTOLOGY

In their simplest form these cysts appear in the skiagram as ovoid or spheroidal cavities in the bone, above and between the apices of the central incisor teeth, which are often overlapped by the shadow (Figs. I and II). Commonly, extension occurs on either side of the median line so that a characteristic bilobed appearance is produced (Fig. III); or sometimes the cyst may be located upon one side only; or two separate cysts may develop side by side. The outline of the bony cavity is always clearly defined. The fibrous wall consists of loose connective tissue lined with epithelium which may be squamous, transitional, or ciliated columnar.

Kronfeld (1933) described an early cyst in the edentulous jaw of an adult cadaver. Sections showed the anterior palatine canal filled with a large mass of stratified epithelium which was solid except for a central part where cystic degeneration had occurred. He also illustrates histological sections of a larger cyst.

Histological sections are illustrated by Stafne, Austin, and Gardner (1936), who suggest that the type of epithelial lining depends upon whether the cyst arises from

(*Continued from previous column*)

Blalock, A., Discussion of Churchill (1936).
Churchill, E. D. (1929) *Arch. Surg.* **19**, 1457.
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Lilienthal, H., Discussion of Beck and Griswold.
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the nasal or stomal epithelium. These writers discuss the daughter cysts, first noted by Congdon (1920) containing mucoid material and found in the wall of the larger cyst, and they describe mucous glands. The nasopalatine blood-vessels and nerves were also seen within the connective tissue wall.

SIGNS AND SYMPTOMS

When the cyst is large attention may be called to the area by swelling on the palate behind the front teeth, or on the gum high up over the incisor teeth and deep to the attachment of the frenum labii. The protuberance is smooth, rounded, painless and hard, unless there has been absorption of the bony covering, when typical springy fluctuation may be elicited. Sometimes the cysts erode through both the palatal and the labial plates of bone and the impulse of palpation may be felt across from labial to palatal. Sometimes the patients detect some slight chronic discharge. In these circumstances examination of the *dried* surface of the palate with a magnifying mirror and a fine dental probe may reveal the fistula (Fig. IV), but the orifices of those which I have seen have been capillary and only traced with difficulty. Growth is slow, and patients may be unaware of the swelling until an artificial denture is fitted and causes discomfort or blocks up a fistula so that tension causes neuralgia, referred first to the glabellar region of the frontal bone and subsequently to the maxilla.

The patient whose radiogram is shown in Fig. V was an edentulous female over 60. She had suffered for 10–12 years from frequent and repeated headaches which were ascribed to toxæmia originating in the gall-bladder, which she refused to have removed. The cycle of symptoms was typical. Without warning she would suffer rapidly increasing pain over the bridge of the nose extending up on the forehead between the supra-orbital sinuses. This would be supplemented two hours later by tenseness and eventual pain in the cyst, and subsequently, unless discharge occurred, there would be slight pyrexia and the malaise of toxic absorption which always induced a painful neurofibrositis of the neck. The patient treated herself by fomenting the premaxillary region and establishing discharge. She refused a radical operation, but, having had great relief from evacuation of the contents with a fine (lacrymal) cannula on a syringe and the instillation of acriflavine emulsion, she consented to having a window made on the palate side large enough to allow permanent free drainage and permit irrigation with a dental water syringe. All her local and general symptoms disappeared. Bacteriological examination of the evacuated contents of the cyst showed: "A purulent specimen containing streptococci and diphtheroid bacilli. Culture grew *Streptococcus viridans* and a few diphtheroid bacilli" (L. Whitby).

OPERATIVE TREATMENT

The simplest treatment of the larger cysts is to make, under Novocain, a circular aperture in either the palatal or the labial wall sufficiently large for permanent drainage and for irrigation. A more satisfactory operation is radical removal, which should be done from whichever aspect is most convenient. If the cyst presents on the labial surface above the central incisors the operation will naturally be done by this route, but there is always a chance of injuring the nerve supply to these teeth, with resulting degeneration and infection of their pulps. The teeth, if conserved, should be tested for vitality from time to time. If the cyst presents on the palate, it should be removed by reflecting the palatal mucosa, as for the extraction of a buried supernumerary tooth; this is simpler, and the innervation of the central incisors is not so gravely threatened. The cyst shells easily out of the bony chamber, but is usually attached to the cords in the upper (nasal) portion of the ducts and found to have been adherent to the deep surface of the palatal integument below.

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THE SIGNIFICANCE OF THE ANGINAL SYNDROME IN ACUTE SPONTANEOUS PNEUMOMEDIASTINUM

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(WITH ILLUSTRATIONS ON PLATE)

THE solution of the anginal puzzle has attracted most clinicians at one time or another, and we would agree with Allbutt (1915a) that "in this secret and fell disease there is a fascination to which no physician is a stranger, a fascination in its dramatic events and in the riddle to be read." That pain, indistinguishable in character and intensity from true stenocardia, may occur when for any reason there is a sudden increase in mediastinal pressure, is not I think widely appreciated. Wassermann (1920) noted severe stenocardia in a patient suffering from influenzal pneumonia complicated by interstitial emphysema, and this after discussing the possibilities, he attributed to the sudden onset of mediastino-pericardial emphysema.

While spontaneous pneumothorax, whether the so-called benign or that secondary to hypertrophic emphysema or other disease of the lungs, is a relatively common condition, mediastinal emphysema must surely be rather rare. This is perhaps surprising when one considers, first, the widespread use during the past decade of artificially induced pneumothorax as a therapeutic measure in chronic pulmonary disease, and secondly, the present-day popularity of strenuous athletics with young people of both sexes. In the cases it has been thought worth while to record here, occurring as they did in young healthy adults, the condition is so analogous to acute benign spontaneous pneumothorax that similar terminology—with the omission of the word "benign," since its benignity is at least doubtful—seems desirable.

ÆTIOLOGY

Mediastinal emphysema may be a complication of many diseases of the lungs. For example, Kelman (1919) and Wassermann (1920) have recorded its occurrence during the influenza pandemic of 1918–1919, as a complication of broncho-pneumonia, and they are in general agreement about the origin and spread of the antecedent interstitial emphysema. Small areas of lung tissue which had not been involved in the pneumonic process were the seat of considerable emphysema, and the strain of severe cough or urgent dyspnœa was enough to rupture the damaged and distended alveoli, and to allow air to escape into the interstitial tissues and so reach the mediastinum by way of the lung root, following the reflexion of the pleura and the pericardium along the great vessels.

Air may also reach the mediastinum by the extension of a subcutaneous emphysema along the endothoracic fascia or the deep fascia at the jugulum, by the direct sucking of atmospheric air through wounds in the apertures of the thorax, by injury to the trachea and main bronchi, by openings in the mediastinal pleura so that air produced by pneumothorax is admitted, and by extension of retroperitoneal emphysema through the crus of the diaphragm.

With this in mind, it is not surprising that mediastinal emphysema may occur in widely differing pathological conditions, and the majority of cases reported have been, as one would expect, secondary to pulmonary tuberculosis. It has also been observed as a complication of pertussis and in the new-born, as the result of strangulation by the umbilical cord. It has occurred as a complication of parturition, where the condition must be due to excessive pressure on the alveolar walls while the patient is straining during full inspiration. Surgical operations on the neck and thorax, tonsillectomy and irrigations of the accessory air sinuses, and stab wounds are some of the less common causes. Congenital cystic disease of the lung, whether of the diffuse so-called honeycomb type or of the commoner poly- or uni-cystic type, is another very possible source of pneumothorax and mediastinal emphysema.

But in the spontaneous type of which the cases here cited are examples, strenuous exertion alone may be the determining cause, and as in the cases occurring in parturient women, there may be no coexistent disease of the lungs.

SYMPTOMS AND SIGNS

Cyanosis of varying degree is usual, but if the quantity of air is small, this may not be a prominent feature. Dyspnœa or perhaps more correctly an alteration in the character of the respiration has been noted in the majority of cases, and congestion of the superficial veins of the neck will be dependent on the amount of extravasated air. The presence of subcutaneous emphysema may mask the characteristic auscultatory signs which consist of curious metallic sounds having the rhythm of pericardial friction and of similar origin to the bruit de moulin that occurs in pneumo-pericardium. This sound, which has been likened to the "rattle of dried peas on taut canvas," may be audible both to patient and observer during the act of deglutition, if the air lies in contact with the œsophagus in any part of its course in the mediastinum. Finally, pain, and pain of a very distinctive character, is so striking a feature of any serious increase in mediastinal pressure from whatever cause, that I think it merits a very full investigation.

My own interest in the subject was aroused when I was called on to deal with the following patient.

CASE REPORTS

A boy, aged 16, was first seen in the early hours of May 28th, 1935, complaining of excruciating pain behind the sternum and radiating down both arms, particularly the left.

Family history.—There is no record of pulmonary disease in the family, and there is nothing of significance in his own history. He has always enjoyed good health and has taken part in all school games.

Present illness.—On the evening of May 27th he took part in a half-mile foot-race trial, with a view to competing at his school sports a week later. On completing the course, he coughed once, dropped down, and immediately experienced a curious sensation in his chest. After resting he was able to make his way home without assistance, and retired early to bed without complaint. During the night he was restless, could not sleep, and in the small hours of the morning, sat bolt upright in obvious distress but was unable to utter a word.

Examination.—When seen a little later the boy looked desperately ill, sitting rigidly in bed, clutching the bedclothes tightly with both hands, unable to speak, and with a very anxious expression. The pulse was small and thready, his respirations were now suspended, now shallow and restrained, and he was perspiring profusely. While his face was very pale, there was evidence of acrocyanosis, and when he could relax for a second, he pointed to the upper end of the sternum as the site of his distress. His temperature was 97·6° F., the pulse-rate 130; his respiratory rate very variable, ranging between 10 and 40, and his pupils were widely dilated. He was given gr. ½ of morphine hypodermically, and when this had taken effect, it was possible to proceed with the examination of his chest. While his whole aspect at once recalled the classical picture of angina pectoris, his clinical story was so strongly suggestive of spontaneous pneumothorax that I was surprised to find no evidence in support of this diagnosis. After the acute distress passed off, he was able to say that his pain was deep-seated behind his sternum, and radiated down his arms, occasionally shooting up behind his ears producing a sense of constriction, and at times running along the rami of the lower jaw into his teeth. He was also conscious of some movement behind his sternum, where the severe pain took origin, sometimes from its upper, sometimes from its lower end.

A provisional diagnosis of air in the mediastinum suggesting itself, he was shortly afterwards admitted to hospital, where he was examined under the fluoroscopic screen and the diagnosis confirmed. Examined in the dorsal decubitus, no abnormality could be made out, but while lying in the left lateral position, a moderately large, single, lenticular-shaped bubble of air could be seen in the posterior mediastinum, and is shown clearly in Fig. I.

Progress.—While in hospital the boy had several further attacks of stenocardia, none of which was quite so severe as the original, but during one of these his systolic blood pressure fell from 120 to 85 mm. Hg, and he complained of pain running down the left arm, interrupted at the elbow, to resume at the wrist and continue into the little finger. For several hours before the onset of this attack he had been conscious of some pain in the left wrist, and on examination there were areas of paræsthesia in the left arm. He was discharged from hospital on June 15th, 1935, and was advised to avoid strenuous exercise for three months.

In March, 1936, he had a similar but milder attack after a game of football, and again in July while playing tennis he felt a sudden acute pain in his chest, but radiological examination, which was carried out 48 hours later, failed to reveal the presence of air in the thorax, and it is probable that it had been absorbed in the interval. On this third occasion the characteristic auscultatory signs were still present 24 hours after the accident but had disappeared by the following day.

For particulars and the radiogram of the second case, the clinical details of which are unfortunately lacking, I am indebted to Dr. Richard Schatzki, assistant radiologist to the Massachusetts General Hospital, Boston, who has kindly consented to its publication.

A healthy youth, aged 20, collapsed at the end of a hundred-mile cycle race, complaining of severe pain in his chest, in the region of the sternum, but unfortunately details as to its radiation are not available. He was examined radiologically some hours after the onset, and Fig. II shows the mediastinal emphysema on the left side, and considerable subcutaneous emphysema in both supraclavicular areas, with no sign of pneumothorax, if we restrict the use of that term to denote the presence of air in the pleural cavity. The air was completely absorbed in a few days.

COMMENT

While the question of a cardiopathy did not arise in the case of the first boy, there is no doubt that the occurrence of similar symptoms in a person twenty

years older would have given rise to considerable difficulty, and in this connexion it is interesting to note that Hamman (1934), dealing with the differential diagnosis of coronary occlusion, cites three cases of interstitial emphysema of the lungs that came under his personal observation and where, following the escape of air into the mediastinum, the pain was similar in type and distribution to that seen in coronary disease.

Inspection of the lateral view of the thorax in Fig. I shows the collection of air to be in the posterior mediastinum, in close contact with the tissues surrounding the aorta, and the increased pressure must have exerted its greatest effect on these structures. The fact that the air was not distributed loosely through the tissues but remained circumscribed may have accounted for the great severity of the reaction, and in my view it seems difficult to escape the conclusion that this sudden alteration of pressure was responsible for the initiation of the anginal attack. That alteration in mediastinal pressure, particularly if it be sudden, may have alarming and even fatal results is well known. More than ten years ago Lord (1925) noted that death apparently due to "deep emphysema" had been observed in 3 instances after the induction of artificial pneumothorax, and Ballon and Francis (1929) quote a series where mediastinal emphysema as a complication of artificial pneumothorax occurred 15 times in 9 of 63 patients, so that the work of these two on the consequences of variations in mediastinal pressure [illegible]e practical importance. They conclude that [illegible]hange in blood pressure after the inflation [illegible]in the rabbit's mediastinum is always [illegible]t some of the results of increased [illegible] mediastinum are: (*a*) pulmonary [illegible]œdema of the tracheo-bronchial [illegible], (*c*) pericardial effusion, (*d*) dis[illegible]on, and (*e*) acute œdema of the [illegible]he mediastinal pressure is round [illegible] of water, and there are no notice[illegible] it reaches zero, when changes do [illegible] rapidly, depending on the amount [illegible]he rapidity of increase. When the [illegible]d beyond plus 35, death takes place [illegible]lmonary œdema.

DISCUSSION

Many will recall with interest the lively debates of twenty years ago as to whether anginal pain was aortic or myocardial in origin. Allbutt (1915b), at great pains to prove by masterly and convincing argument that angina pectoris is a disease sui generis, rails at one of his contemporaries who dares to prefer the more popular "syndrome" or "symptom group" concept, and accuses him of propounding the theory "that a similar series of events can have dissimilar causes." He himself (1915c) finds an excuse for this reluctance to accept angina as a disease "in the shifting explanations of the pathology of the anginous process," and surely there is some justification for such hesitation, if it be taken as proved that "this dynamic procession of symptoms" may result from such vastly different pathological conditions as coronary thrombosis and mediastinal emphysema. Such an admission would not necessarily imply that the mechanism responsible for the "dynamic procession" was different in the two conditions, but would certainly suggest that it may be set in motion by very different pathological factors.

Ewart (1912) quotes a case from Perez that has evoked much comment, where the patient, an elderly phthisical subject suffering from tuberculous mediastinopericarditis, experienced typical anginal pain, and Allbutt (1915d) mentions the remarkable case of angina recorded by Haygarth of Chester, "which proved on autopsy to be one of mediastinal suppurative inflammation, apparently involving the base of the heart and the great vessels." Hare (1906) considered that angina was "due to painful distension of the mediastinum, and this to intense vasomotor constriction in very large areas elsewhere," but Allbutt points out that vasomotor changes although relatively common in angina are not essential, and, propounding his well-known "pressure tambour" theory in which the suprasigmoid portion of the aorta is regarded as the mainspring of the attack, he adduces valuable evidence in its support. There can be little doubt, I think, that true angina may occur in the entire absence of any pathological lesion in the coronaries, and conversely, gross disease in these vessels does not necessarily predicate attacks of angina. It seems reasonable to suppose therefore that they play no part in the actual mechanism of the anginal syndrome. That disturbance of their function however, particularly if it be sudden—spasm or thrombosis—may set the anginal mechanism in motion seems more than probable, and if so, must we not assume the presence of a "knot of exalted sensibility" somewhere in the circuit? Most physiologists are now agreed that there is an important vasosensory area in the first part of the aorta, and Spiegel and Wassermann (1926), by injecting saline into a part of the aorta that had been ligatured off, were able to produce pain in dogs (as registered by movements of the animal's lower jaw) after vagal section and sympathectomy. This proof of pain as a result of stretching of the investment of the aorta is in complete accord with the views of Allbutt and Wenckebach, and the former (1915e) cites a number of cases of rupture of the aorta, where the vessel coats were split asunder by dissecting hæmorrhage, and where this accident was associated with intense anginal pain. Sutton and Lueth (1930), who are on the side of the "coronarians," state that "the nerve fibres responsible for conducting the pain sensations from the heart are those fibres in the adventitia of the blood vessels or the adjacent tissues."

It seems reasonable to postulate the existence of a complex and highly specialised centre controlling the anginal mechanism when one considers the analogy of a similar control of the important lung reflexes by just such a centre or centres situated at the lung root, and of whose existence the thoracoplastic surgeon is only too well aware. Remembering the course of the sensory fibres, which accompany veins as well as arteries, it seems likely that this centre—or the more important station of this centre—is situated in the integuments of the aorta, and that a lesser or substation may be similarly related to the pulmonary artery, which might account for the dramatic results of embolism of that vessel. Further, from some interesting observations of Wassermann (1931) on forced respiration and apnœa in angina, it seems that there may be a very close liaison between these cardiac and respiratory control stations; indeed, according to Anrep (1936), there are some physiologists who maintain that the aorta and the carotid sinus are the chief regulators of respiration. Fortunately the vexed question of the pathway of impulses to the sensorium and their various reflex arcs does not come within the scope of this discussion.

SUMMARY

Two cases of acute spontaneous pneumomediastinum are reported and the occurrence of the anginal

Air may also reach the mediastinum by the extension of a subcutaneous emphysema along the endothoracic fascia or the deep fascia at the jugulum, by the direct sucking of atmospheric air through wounds in the apertures of the thorax, by injury to the trachea and main bronchi, by openings in the mediastinal pleura so that air produced by pneumothorax is admitted, and by extension of retroperitoneal emphysema through the crus of the diaphragm.

With this in mind, it is not surprising that mediastinal emphysema may occur in widely differing pathological conditions, and the majority of cases reported have been, as one would expect, secondary to pulmonary tuberculosis. It has also been observed as a complication of pertussis and in the new-born, as the result of strangulation by the umbilical cord. It has occurred as a complication of parturition, where the condition must be due to excessive pressure on the alveolar walls while the patient is straining during full inspiration. Surgical operations on the neck and thorax, tonsillectomy and irrigations of the accessory air sinuses, and stab wounds are some of the less common causes. Congenital cystic disease of the lung, whether of the diffuse so-called honeycomb type or of the commoner poly- or uni-cystic type, is another very possible source of pneumothorax and mediastinal emphysema.

But in the spontaneous type of which the cases here cited are examples, strenuous exertion alone may be the determining cause, and as in the cases occurring in parturient women, there may be no coexistent disease of the lungs.

SYMPTOMS AND SIGNS

Cyanosis of varying degree is usual, but if the quantity of air is small, this may not be a prominent feature. Dyspnœa or perhaps more correctly an alteration in the character of the respiration has been noted in the majority of cases, and congestion of the superficial veins of the neck will be dependent on the amount of extravasated air. The presence of subcutaneous emphysema may mask the characteristic auscultatory signs which consist of curious metallic sounds having the rhythm of pericardial friction and of similar origin to the bruit de moulin that occurs in pneumo-pericardium. This sound, which has been likened to the "rattle of dried peas on taut canvas," may be audible both to patient and observer during the act of deglutition, if the air lies in contact with the œsophagus in any part of its course in the mediastinum. Finally, pain, and pain of a very distinctive character, is so striking a feature of any serious increase in mediastinal pressure from whatever cause, that I think it merits a very full investigation.

My own interest in the subject was aroused when I was called on to deal with the following patient.

CASE REPORTS

A boy, aged 16, was first seen in the early hours of May 28th, 1935, complaining of excruciating pain behind the sternum and radiating down both arms, particularly the left.

Family history.—There is no record of pulmonary disease in the family, and there is nothing of significance in his own history. He has always enjoyed good health and has taken part in all school games.

Present illness.—On the evening of May 27th he took part in a half-mile foot-race trial, with a view to competing at his school sports a week later. On completing the course, he coughed once, dropped down, and immediately experienced a curious sensation in his chest. After resting he was able to make his way home without assistance, and retired early to bed without complaint. During the night he was restless, could not sleep, and in the small hours of the morning, sat bolt upright in obvious distress but was unable to utter a word.

Examination.—When seen a little later the boy looked desperately ill, sitting rigidly in bed, clutching the bedclothes tightly with both hands, unable to speak, and with a very anxious expression. The pulse was small and thready, his respirations were now suspended, now shallow and restrained, and he was perspiring profusely. While his face was very pale, there was evidence of acrocyanosis, and when he could relax for a second, he pointed to the upper end of the sternum as the site of his distress. His temperature was 97·6° F., the pulse-rate 130; his respiratory rate very variable, ranging between 10 and 40, and his pupils were widely dilated. He was given gr. $\frac{1}{2}$ of morphine hypodermically, and when this had taken effect, it was possible to proceed with the examination of his chest. While his whole aspect at once recalled the classical picture of angina pectoris, his clinical story was so strongly suggestive of spontaneous pneumothorax that I was surprised to find no evidence in support of this diagnosis. After the acute distress passed off, he was able to say that his pain was deep-seated behind his sternum, and radiated down his arms, occasionally shooting up behind his ears producing a sense of constriction, and at times running along the rami of the lower jaw into his teeth. He was also conscious of some movement behind his sternum, where the severe pain took origin, sometimes from its upper, sometimes from its lower end.

A provisional diagnosis of air in the mediastinum suggesting itself, he was shortly afterwards admitted to hospital, where he was examined under the fluoroscopic screen and the diagnosis confirmed. Examined in the dorsal decubitus, no abnormality could be made out, but while lying in the left lateral position, a moderately large, single, lenticular-shaped bubble of air could be seen in the posterior mediastinum, and is shown clearly in Fig. I.

Progress.—While in hospital the boy had several further attacks of stenocardia, none of which was quite so severe as the original, but during one of these his systolic blood pressure fell from 120 to 85 mm. Hg, and he complained of pain running down the left arm, interrupted at the elbow, to resume at the wrist and continue into the left little finger. For several hours before the onset of this attack he had been conscious of some pain in the left thumb, and on examination there were areas of paræsthesia in this arm. He was discharged from hospital on June 15th, 1935, and was advised to avoid strenuous exercise for six months.

In March, 1936, he had a similar but milder attack after a game of football, and again in July while playing tennis he felt a sudden acute pain in his chest, but radiological examination, which was carried out 48 hours later, failed to reveal the presence of air in the thorax, and it is probable that it had been absorbed in the interval. On this third occasion the characteristic auscultatory signs were still present 24 hours after the accident but had disappeared by the following day.

For particulars and the radiogram of the second case, the clinical details of which are unfortunately lacking, I am indebted to Dr. Richard Schatzki, assistant radiologist to the Massachusetts General Hospital, Boston, who has kindly consented to its publication.

A healthy youth, aged 20, collapsed at the end of a hundred-mile cycle race, complaining of severe pain in his chest, in the region of the sternum, but unfortunately details as to its radiation are not available. He was examined radiologically some hours after the onset, and Fig. II shows the mediastinal emphysema on the left side, and considerable subcutaneous emphysema in both supraclavicular areas, with no sign of pneumothorax, if we restrict the use of that term to denote the presence of air in the pleural cavity. The air was completely absorbed in a few days.

COMMENT

While the question of a cardiopathy did not arise in the case of the first boy, there is no doubt that the occurrence of similar symptoms in a person twenty

years older would have given rise to considerable difficulty, and in this connexion it is interesting to note that Hamman (1934), dealing with the differential diagnosis of coronary occlusion, cites three cases of interstitial emphysema of the lungs that came under his personal observation and where, following the escape of air into the mediastinum, the pain was similar in type and distribution to that seen in coronary disease.

Inspection of the lateral view of the thorax in Fig. I shows the collection of air to be in the posterior mediastinum, in close contact with the tissues surrounding the aorta, and the increased pressure must have exerted its greatest effect on these structures. The fact that the air was not distributed loosely through the tissues but remained circumscribed may have accounted for the great severity of the reaction, and in my view it seems difficult to escape the conclusion that this sudden alteration of pressure was responsible for the initiation of the anginal attack. That alteration in mediastinal pressure, particularly if it be sudden, may have alarming and even fatal results is well known. More than ten years ago Lord (1925) noted that death apparently due to "deep emphysema" had been observed in 3 instances after the induction of artificial pneumothorax, and Ballon and Francis (1929) quote a series where mediastinal emphysema as a complication of artificial pneumothorax occurred 15 times in 9 of 63 patients, so that the work of these two on the consequences of variations in mediastinal pressure is of some practical importance. They conclude that the initial change in blood pressure after the inflation of a balloon in the rabbit's mediastinum is always a fall, and that some of the results of increased pressure in the mediastinum are: (*a*) pulmonary emphysema, (*b*) œdema of the tracheo-bronchial mucous membrane, (*c*) pericardial effusion, (*d*) disordered heart action, and (*e*) acute œdema of the lungs. Normally the mediastinal pressure is round about minus 4 mm. of water, and there are no noticeable changes until it reaches zero, when changes do occur and progress rapidly, depending on the amount of pressure and the rapidity of increase. When the pressure is raised beyond plus 35, death takes place from acute pulmonary œdema.

DISCUSSION

Many will recall with interest the lively debates of twenty years ago as to whether anginal pain was aortic or myocardial in origin. Allbutt (1915b), at great pains to prove by masterly and convincing argument that angina pectoris is a disease sui generis, rails at one of his contemporaries who dares to prefer the more popular "syndrome" or "symptom group" concept, and accuses him of propounding the theory "that a similar series of events can have dissimilar causes." He himself (1915c) finds an excuse for this reluctance to accept angina as a disease "in the shifting explanations of the pathology of the anginous process," and surely there is some justification for such hesitation, if it be taken as proved that "this dynamic procession of symptoms" may result from such vastly different pathological conditions as coronary thrombosis and mediastinal emphysema. Such an admission would not necessarily imply that the mechanism responsible for the "dynamic procession" was different in the two conditions, but would certainly suggest that it may be set in motion by very different pathological factors.

Ewart (1912) quotes a case from Perez that has evoked much comment, where the patient, an elderly phthisical subject suffering from tuberculous mediastinopericarditis, experienced typical anginal pain, and Allbutt (1915d) mentions the remarkable case of angina recorded by Haygarth of Chester, "which proved on autopsy to be one of mediastinal suppurative inflammation, apparently involving the base of the heart and the great vessels." Hare (1906) considered that angina was "due to painful distension of the mediastinum, and this to intense vasomotor constriction in very large areas elsewhere," but Allbutt points out that vasomotor changes although relatively common in angina are not essential, and, propounding his well-known "pressure tambour" theory in which the suprasigmoid portion of the aorta is regarded as the mainspring of the attack, he adduces valuable evidence in its support. There can be little doubt, I think, that true angina may occur in the entire absence of any pathological lesion in the coronaries, and conversely, gross disease in these vessels does not necessarily predicate attacks of angina. It seems reasonable to suppose therefore that they play no part in the actual mechanism of the anginal syndrome. That disturbance of their function however, particularly if it be sudden—spasm or thrombosis—may set the anginal mechanism in motion seems more than probable, and if so, must we not assume the presence of a "knot of exalted sensibility" somewhere in the circuit? Most physiologists are now agreed that there is an important vasosensory area in the first part of the aorta, and Spiegel and Wassermann (1926), by injecting saline into a part of the aorta that had been ligatured off, were able to produce pain in dogs (as registered by movements of the animal's lower jaw) after vagal section and sympathectomy. This proof of pain as a result of stretching of the investment of the aorta is in complete accord with the views of Allbutt and Wenckebach, and the former (1915e) cites a number of cases of rupture of the aorta, where the vessel coats were split asunder by dissecting hæmorrhage, and where this accident was associated with intense anginal pain. Sutton and Lueth (1930), who are on the side of the "coronarians," state that "the nerve fibres responsible for conducting the pain sensations from the heart are those fibres in the adventitia of the blood vessels or the adjacent tissues."

It seems reasonable to postulate the existence of a complex and highly specialised centre controlling the anginal mechanism when one considers the analogy of a similar control of the important lung reflexes by just such a centre or centres situated at the lung root, and of whose existence the thoracoplastic surgeon is only too well aware. Remembering the course of the sensory fibres, which accompany veins as well as arteries, it seems likely that this centre—or the more important station of this centre—is situated in the integuments of the aorta, and that a lesser or substation may be similarly related to the pulmonary artery, which might account for the dramatic results of embolism of that vessel. Further, from some interesting observations of Wassermann (1931) on forced respiration and apnœa in angina, it seems that there may be a very close liaison between these cardiac and respiratory control stations; indeed, according to Anrep (1936), there are some physiologists who maintain that the aorta and the carotid sinus are the chief regulators of respiration. Fortunately the vexed question of the pathway of impulses to the sensorium and their various reflex arcs does not come within the scope of this discussion.

SUMMARY

Two cases of acute spontaneous pneumomediastinum are reported and the occurrence of the anginal

syndrome in one of these is noted and discussed. A plea is put forward for a reconsideration of Allbutt's well-thought-out "sensitive tambour" theory of the initiation of anginal pain.

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ON THE RELATIONSHIP BETWEEN THE MALE GONADS AND THE ADRENAL GLAND

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AND

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BEIT MEMORIAL FELLOW

(*From the Imperial Cancer Research Fund, London*)

(WITH ILLUSTRATIVE PLATE)

THE adrenal of the adult male mouse consists of a relatively large medulla and a relatively narrow cortex. It has been described and figured by Cramer in his book "Fever, Heat Regulation, Climate and the Thyroid Adrenal Apparatus." When adult male mice are castrated the volume of the medulla charged with adrenaline undergoes a marked diminution and a broad ring of tissue appears between the central medullary core and the cortex (Fig. II on Plate). This ring of tissue when examined by the routine histological methods is seen to consist of cells which have neither the appearance of cortical cells nor of medullary cells. The appearance of this ring of tissue after castration was first described by Deanesly and has now been confirmed by us. It is identical in appearance with the ring of tissue seen in normal young female mice and described in the literature as boundary zone or X-zone. This zone is not present in the adrenals of male mice of mixed strains. In the adrenals of female mice it gradually disappears as the animals get older.

When the male sex hormone testosterone is injected into castrated male mice the volume of the medulla increases, the X-zone rapidly disappears, and the adrenal resumes the appearance of the gland seen in a normal adult male mouse (Fig. I). The same result is obtained when testosterone is injected into young but sexually mature female mice, in which this zone is almost always present. This applies to intact and to spayed female mice (Fig. IV). In such mice the injection of testosterone also leads rapidly to the disappearance of the boundary zone, with an increase in the volume of the medulla (Fig. III). None of the anterior pituitary hormones that we have applied produces this effect, which appears, therefore, to be caused by a direct action of testosterone on the adrenal gland. The œstrogenic hormones also fail to bring about a disappearance of the X-zone in normal female and in spayed female mice.

The testosterone preparation used was testosterone propionate, which had been very generously put at our disposal by Messrs. Schering-Kahlbaum. It was injected three times weekly in doses of 1 mg. dissolved in oil for periods varying from 12–28 days. The first injection was given two weeks after castration.

These observations demonstrate a close functional relationship between the adrenal gland and the male sex hormone. In the absence of the latter the number of the medullary cells fully charged with adrenaline and available for the functional activity of secreting adrenaline is greatly diminished. The X-zone or boundary zone which appears after castration consists mainly of medullary cells which have temporarily been inhibited from forming adrenaline. That this is so can be demonstrated conclusively by examining the adrenal gland of castrated mice after fixation in osmic vapour. By this method the adrenaline of the medullary cells is rendered visible as osmophil granules. In the gland of a normal male mouse all the medullary cells are fully charged with adrenaline, and the medulla has a regular outline sharply delimited from the cortex by a leash of blood-vessels. After castration the adrenaline granules have partly or completely disappeared from the peripheral part of the medulla. There is still a central core of medullary cells fully charged with adrenaline, but this central core is diminished in volume and its outline has become irregular. Passing outward from this there is a gradual transition from these fully charged cells to cells only partly charged with adrenaline granules, and in the peripheral part quite free from them, but even when the cells are free from

LEGENDS TO ILLUSTRATIONS ON PLATE

MR. PILCHER

FIG. I.—Antero-posterior view showing high diaphragm, increased transverse diameter of heart, and calcified plaque near left border.

FIG. II.—Oblique view showing ring of calcification.

FIG. V.—After operation showing lower diaphragm, decreased transverse and increased vertical diameter of heart.

MR. BOWDLER HENRY

FIG. I.—Skiagram of a dry specimen of the palate of an Australian aboriginal showing cyst of the nasopalatine canal. (Specimen given to the writer by Dr. W. E. Fish.)

FIGS. II and III.—Skiagrams of nasopalatine cysts showing typical variations of shape.

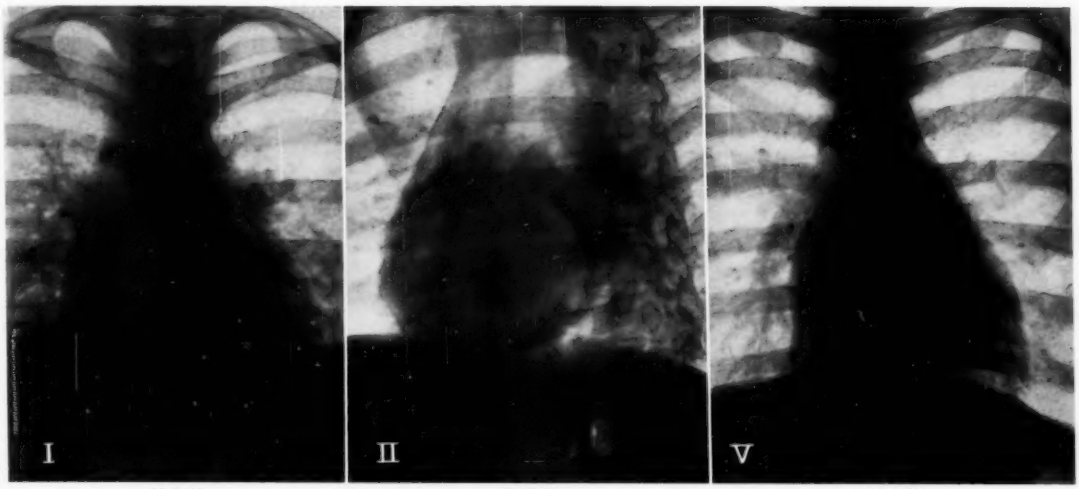
FIG. IV.—Skiagrams of a nasopalatine cyst with silver probe passed through sinus opening into the mouth.

FIG. V.—Skiagram of a nasopalatine cyst in an edentulous patient, causing intermittent frontal neuralgia and symptoms of toxæmia.

DR. SCOTT

FIG. I.—Lateral view of thorax showing bubble of air in posterior mediastinum in a boy aged 16 with anginal attacks.

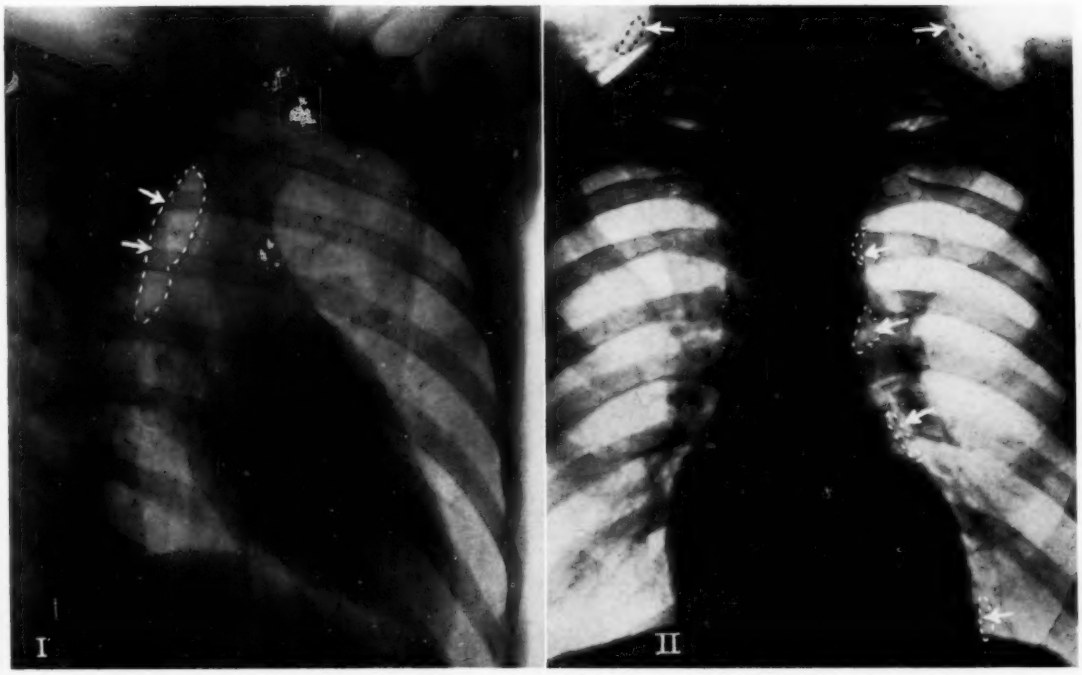
FIG. II.—Antero-posterior view showing subcutaneous emphysema in supraclavicular regions and mediastinal emphysema on left side.



20.IX.35 26.IX.35 10.IX.36

MR. PILCHER : PERICARDIAL RESECTION FOR CONSTRICTIVE PERICARDITIS

MR. BOWDLER HENRY : CYSTS OF NASOPALATINE CANAL



DR. SCOTT : ANGINAL SYNDROME IN ACUTE SPONTANEOUS PNEUMOMEDIASTINUM

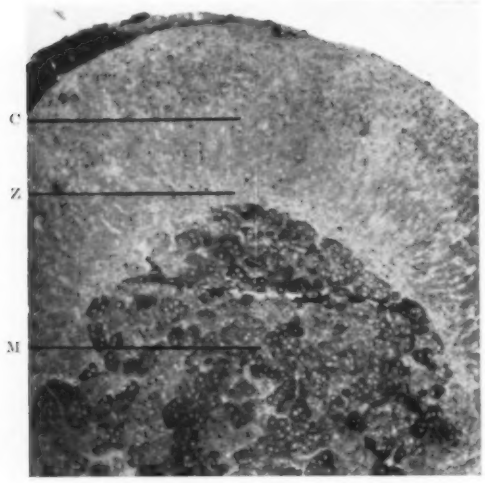


FIG. I

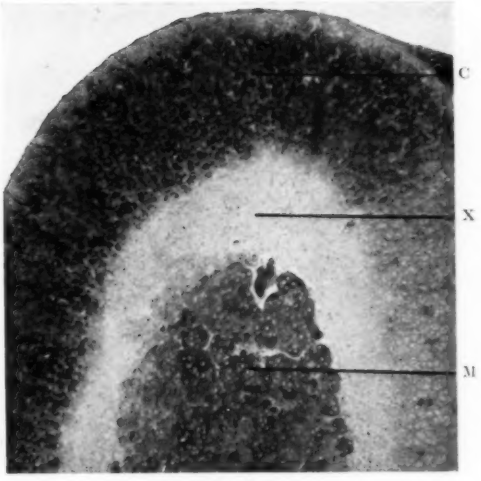


FIG. II

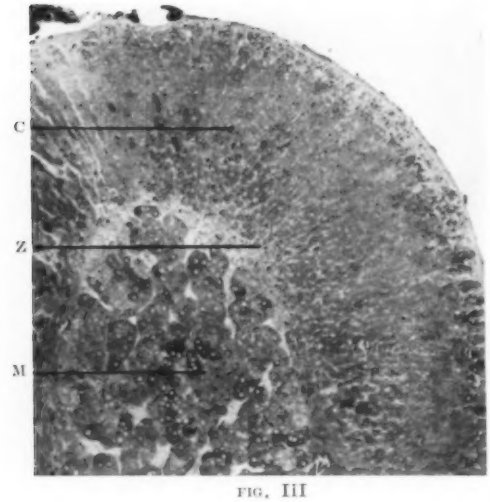


FIG. III

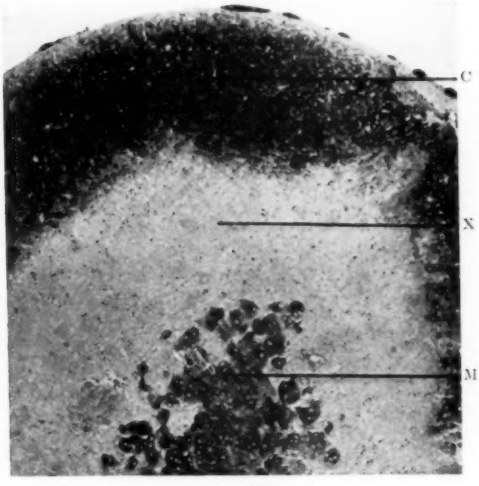
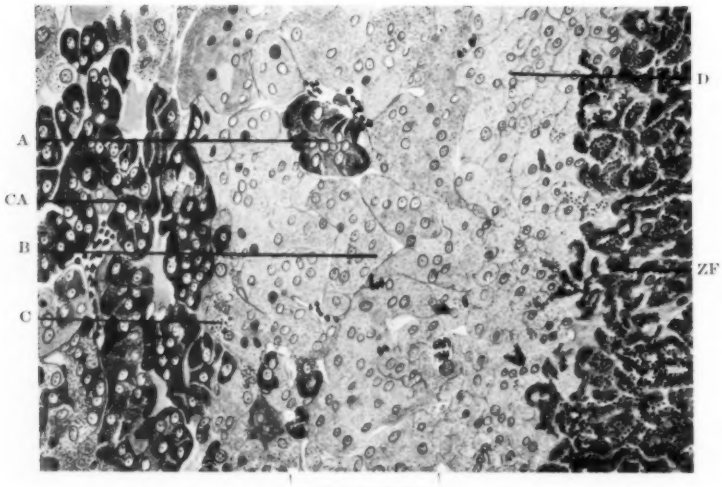


FIG. IV



100 μ

FIG. V

DR. CRAMER AND
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MALE GONADS
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adrenaline they still show the arrangement in alveoli characteristic of the medulla. Such an alveolus may sometimes consist half of cells still containing adrenaline granules, while in the other half the cells are free from them, or an alveolus of cells fully charged with adrenaline may lie like an islet among cells deprived of adrenaline. In the peripheral part of the X-zone the cells are often indistinguishable from cortical cells deprived of lipoids, so that the peripheral part of the X-zone may consist of cortical cells. Even the leash of blood-vessels which normally delimits the medulla can sometimes be seen at the peripheral end of the X-zone. The same phenomenon of an ebbing-away of adrenaline from the peripheral part of the medulla can be demonstrated in the adrenals of young female mice, where the X-zone is almost always present (Fig. V). The phenomenon was described and figured in greater detail than is possible in this communication by Cramer in his book, although he did not recognise then that it was essentially a sex difference.

A number of other observers (Tamura, Howard-Miller, Deanesly, and Whitehead) have since interpreted the X-zone or boundary zone as representing a separate anatomical entity, distinct from either cortex or medulla and disappearing as the result of a process of degeneration. Grollman in his book calls it a third tissue, and ascribing to it on purely speculative grounds masculinising properties has called it "androgenic tissue." The rapid appearance of this zone in adult male mice after castration and its rapid disappearance after the administration of testosterone shows that this view is untenable and that the term "androgenic tissue" is, in any case, a singularly inapt misnomer.

CONCLUSION

The experiments with testosterone show that the X-zone is the morphological expression of a functional change in the adrenal gland, and in so far as this functional change consists in a marked diminution in the number of cells charged with adrenaline and available for the secretion of adrenaline, this functional change may logically be described as an inhibition. The action of testosterone on the adrenal gland thus affords a satisfactory explanation of the phenomenon of the X-zone in normal mice. It is absent in male mice, because under the influence of testosterone the medullary cells maintain their full load of adrenaline throughout the whole extent of the medulla. The X-zone is present in young female mice, even when sexually mature, because in the absence of the male sex hormone the peripheral cells of the medulla do not maintain their load of adrenaline. The fact that the X-zone disappears in female mice as they grow older seems to indicate that there is an increased formation of the male sex hormone in female mice as age advances.

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THE TREATMENT OF STREPTOCOCCAL INFECTIONS IN MICE WITH 4:4′DIAMINODIPHENYLSULPHONE

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AFTER Domagk's initial discovery (1935) of the therapeutic value of Prontosil in streptococcal infections of mice, and the further discovery by Tréfouël, Nitti, and Bovet (1935) that *p*-aminobenzenesulphonamide (commonly called sulphanilamide or sulphonamide P) was also active, a number of other compounds of this series have been tested (Buttle et al. 1936, Fourneau et al. 1936, Goissedet et al. 1936, Tréfouël et al. 1937, Gray et al. 1937), but in no case was there a striking increase in activity over sulphanilamide.

The present communication deals with two compounds of a different chemical structure. The first, 4:4′diaminodiphenylsulphone, is considerably more active than sulphanilamide in curing streptococcal infections of mice but is more toxic to mice; the second, 4:4′dinitrodiphenylsulphone, is as active as sulphanilamide but is less toxic. 4:4′diaminodiphenylsulphone, NH_2⬡SO_2⬡NH_2 (Fromm and Wittmann 1908), occurs in very long colourless rectangular plates, m.p. 176° C. It is sparingly soluble (0·01 per cent.) in water at room temperature, but more soluble (0·05 per cent.) in

LEGENDS TO ILLUSTRATIONS ON PLATE

DR. CRAMER AND DR. HORNING

All sections are of adrenal glands of mice fixed by the osmic vapour method. Figs. I–IV are photomicrographs, and Fig. V is a camera-lucida drawing. In Figs. I–IV C=cortex; Z=zona reticularis; X=boundary zone or X-zone; and M=medulla.

FIG. I.—Section through adrenal gland of a castrated male mouse showing the disappearance of the X-zone after administration of testosterone propionate.

FIG. II.—Adrenal of castrated male mouse with a broad X-zone.

FIG. III.—Section of adrenal of a spayed female mouse illustrating complete disappearance of the X-zone following treatment with testosterone.

FIG. IV.—Adrenal of a spayed female mouse showing a broad X-zone.

FIG. V.—X-zone of female mouse adrenal showing on the left the medullary core of the gland (CA) with its cells fully charged with adrenaline and on the right the inner end of the zona fasciculata (ZF) of the cortex with its cells containing lipoid globules. Between them lies the broad X-zone. It is composed of cells partly charged with adrenaline (C) lying next to the medullary core and of cells with large clear nuclei free from adrenaline but still arranged in alveolar formation (B). Among them there are islets of cells fully charged with adrenaline (A). This part of the X-zone becomes completely charged with adrenaline after testosterone and belongs to the medulla. The peripheral part of the X-zone in this figure consists of irregularly arranged cells free from cell inclusions (D), and it is cortical in origin.

TABLE I

COMPARISON OF SULPHANILAMIDE, 4:4′DINITRODIPHENYLSULPHONE, AND 4:4′DIAMINODIPHENYLSULPHONE

Treatment (by mouth).	Hæmolytic streptococci "Richards" I.P.	Approx. number of organisms.	Number of mice (out of groups of 10) dying on each day after infection.										Mice surviving 10 days.
			1	2	3	4	5	6	7	8	9	10	
	c.cm.												
Controls untreated.	10^{-9}	2	0	2	2	0	0	0	0	0	0	0	6
	10^{-7}	130	3	5	0	0	0	0	1	0	0	0	1
	10^{-5}	13,000	7	3	0	0	0	0	0	0	0	0	0
Sulphanilamide—													
40 mg.: 1, 2, 3, & 4th day.	10^{-5}	13,000	0	0	0	0	0	0	0	0	0	2	8
4 mg. ,,	10^{-5}	13,000	1	2	0	0	0	0	2	1	0	0	4
0·4 mg. ,,	10^{-5}	13,000	1	4	0	1	0	2	0	0	0	1	1
4:4′dinitrodiphenylsulphone—													
40 mg.: 1, 2, 3, & 4th day.	10^{-5}	13,000	1	0	1	0	0	1	0	0	0	0	7
4 mg. ,,	10^{-5}	13,000	0	1	0	0	0	0	0	0	2	0	7
0·4 mg. ,,	10^{-5}	13,000	2	2	1	0	0	0	0	0	1	0	4
4:4′diaminodiphenylsulphone—													
4 mg.: 1, 2, 3, & 4th day.	10^{-5}	13,000	2	2	1	0	0	0	0	0	1	0	4
0·4 mg. ,,	10^{-5}	13,000	0	0	0	0	0	0	0	0	1	1	8
0·04 mg. ,,	10^{-5}	13,000	1	1	2	0	0	0	0	1	0	0	5
Sulphanilamide—													
50 mg. daily.	10^{-3}	1,300,000	6	2	1	0	0	0	0	0	0	0	1
4:4′diaminodiphenylsulphone—													
2 mg. daily for 6 days, 1 mg. daily for 4 days.	10^{-3}	1,300,000	0	2	1	0	0	0	0	2	0	0	5

Mice weighed 25 g.

hot water. 4:4′dinitrodiphenylsulphone (Fromm and Wittmann 1908) is an amorphous yellowish powder, insoluble in water.

TOXICITY

Sulphanilamide is tolerated in 50 mg. doses given by mouth to mice of 20 gramme weight; these doses can be repeated daily in 25 g. mice infected with streptococci (Buttle et al. 1936). The 4:4′dinitrodiphenylsulphone is tolerated in 200 mg. doses given by mouth, but a 400 mg. dose is lethal; doses of 40 mg. can be given repeatedly to infected mice. The 4:4′diaminodiphenylsulphone is tolerated in 5 mg. doses given by mouth; 2 mg. can be given daily to normal or infected mice, but daily doses of 5 mg. kill some of the animals. The drug is slightly more toxic in infected animals.

Although the diaminosulphone is about ten times as toxic as sulphanilamide when a single dose is given to normal mice (and about twenty-five times as toxic when the doses are given daily to infected animals), it is not more toxic to normal rabbits and monkeys. Single doses of 2·0 g. per kg. of either of the drugs produce slight symptoms in the rabbit but not in the monkey. (The dinitro compound has not yet been tried in these animals.) A single dose of 0·3 g. of the diamino compound was taken by a healthy human individual and caused no symptoms; five hours after the administration of the drug, however, the blood contained a very small quantity of methæmoglobin. A monkey which had received much larger doses of the drug (1·0 g. per kg.) had a much larger quantity of methæmoglobin in the blood, but this was not associated with any respiratory embarrassment or other change. A similar dose of sulphanilamide when given to another monkey did not produce methæmoglobinæmia.

We are indebted to Mr. G. Discombe, St. Bartholomew's Hospital, for demonstrating the presence of small quantities of methæmoglobin in the blood (see Discombe 1937). The urine of the individual mentioned above was examined for the presence of the sulphone using the diazo reaction with thymol. There was a considerable quantity in the 12- and the 18-hour specimens, but very little was excreted in the first 6 hours. Blood counts were normal the day after taking the drug.

Toxic doses of these sulphones have an action on the nervous system in mice which is somewhat different from that of sulphanilamide. With the new drugs the mice appear excited and often run continuously round their cages; if they are taken from the cages and placed on the table, they move about without any apparent purpose, sometimes running straight over the edge; when lethal doses are given, they become paralysed and have difficulty in respiration. With sulphanilamide, on the other hand, the mice rapidly become paralysed and move their limbs continuously in an incoördinate manner. The symptoms produced by the new drugs are much more persistent than with sulphanilamide; they may last for 48 hours or longer, whereas with sulphanilamide the mice either die or recover within 6 hours. Lethal doses of the new drugs cause intense dilatation of the stomach and small intestine in mice, and slight swelling of the belly may be observed in rabbits which receive large doses, but it is not great in proportion to the size of the animal. These changes are not produced by sulphanilamide.

THERAPEUTIC EFFECTS

In hæmolytic streptococcal infections.—Mice were infected with streptococci ("Richards") intraperitoneally and treated with the various drugs, administered orally (Buttle et al. 1936). Table I shows a comparison between the therapeutic effects of sulphanilamide and of the dinitro- and diamino-sulphones. The dinitrosulphone is as effective as sulphanilamide when similar doses are used. In the case of the diaminosulphone, doses of 0·4 mg. are as effective as 40 mg. of sulphanilamide, and doses of 0·04 mg. are only slightly inferior; owing to the toxicity of the drug, however, doses of 4 mg. of the sulphone do not give such good results. The second part of the Table shows that a better degree of protection is obtained against a large dose of culture with 2 mg. of the diaminosulphone than with 50 mg. of sulphanilamide. (Approximately 2000 mice have been used in this investigation, but hitherto no more than one strain of hæmolytic streptococci.)

As the diaminosulphone is not more toxic for rabbits than sulphanilamide, it would be interesting to know how the two drugs compare in therapeutic activity in this animal. Unfortunately we have not been able to obtain a Lancefield Group A strain or any human strain which is virulent for rabbits. Preliminary experiments have been done with a Group C strain, P.230, which was isolated from a guinea-pig epidemic by Dr. Theobald Smith and was sent to us by the courtesy of Dr. Homer Swift. Although the diaminosulphone is more active than sulphanilamide, the difference between the drugs is not so great as in the mouse experiments. It appeared from the rabbit experiments that daily doses of 15 mg. per kg. of the sulphone by mouth are not quite so effective as 150 mg. per kg. of sulphanilamide; on the other hand, doses of 150 mg. per kg. of the sulphone are more effective than doses of 150 mg. per kg. of sulphanilamide.

The bactericidal effect of the blood of a (3·1 kg.) monkey (*Silenus rhesus*) was studied at intervals after the administration of (*a*) 4 g. of sulphanilamide, and (*b*) 1 g. of the diaminosulphone given by mouth (Table II). The rotating-tube technique (Colebrook et al. 1936, Todd 1927) was used in these experiments. The maximum bactericidal effect was of the same order in both cases; the effect of sulphanilamide, however, disappeared within 48 hours, whereas that of the diaminosulphone, which was not quite so rapid in its onset, lasted for 96 hours. This experiment was repeated: another monkey, weighing 2·5 kg., received 200 mg. of each drug on two separate occasions, and it was again found that the maximum bactericidal effect obtained was of the same order for the two drugs; 300 cocci were killed in 0·5 c.cm. samples after treatment, whereas 3 cocci grew freely in normal samples. The effect of the diaminosulphone was again more persistent than that of the sulphanilamide.

TABLE II

Bactericidal effects induced in the blood of a monkey by the administration of (a) *4 g. of sulphanilamide and* (b) *1 g. of 4:4′diaminodiphenylsulphone.*

Treatment.	Hours after drug.	Number of organisms implanted in 0·5 c.cm. of blood (rotating-tube technique).				
		2	20	200	2000	20,000
(*a*) Sulphanilamide 4 g. (Feb. 23rd, 1937.)	0	H	H	..	..	..
	1	−0	−0	−0	−0	H
	5	−0	−0	−0	−0	− +
	24	−0	− +	H	..	..
	48	H	H	..	..	..
(*b*) 4:4′ diaminodiphenyl-sulphone 1 g. (April 16th, 1937.)	0	H	H	..	..	..
	1½	−0	−0	− +	− +	..
	5	−0	−0	−0	−0	− +
	24	−0	−0	−0	− +	..
	48	−0	−0	− +	..	..
	96	−0	−0	H	..	..
	120	H	H	..	..	..

−0 = no hæmolysis of blood, and no streptococci found on subculture.
− + = no hæmolysis of blood, but streptococci grown on subculture.
H = hæmolysis of the blood with full growth of streptococci.

Controls with normal blood from another animal were put up on each occasion and the cocci grew freely from the smallest inoculum.

The bactericidal effect in the blood of man after the administration of the drug by mouth has not been sufficiently determined, but in one experiment in which a dose of 0·3 g. was given, 0·5 c.cm. samples of blood (G. A. H. B.) withdrawn six hours after the administration destroyed 400 cocci and inhibited the growth of 40,000, whereas 400 cocci grew in a specimen of blood taken before administration, and 40 cocci were destroyed.

When 0·001 per cent. of the diaminosulphone was added to 0·5 c.cm. quantities of monkey blood in vitro a bactericidal effect was obtained which was greater than that with sulphanilamide in equal concentrations; but it was not quite so great as that with 0·01 per cent. of the latter. With 0·001 per cent. of the sulphone 80 cocci were completely destroyed, and the growth of 800 was slightly delayed; with sulphanilamide, on the other hand, 0·001 per cent. only delayed the growth of 8 cocci for 48 hours, while 0·01 per cent. delayed the growth of 800 cocci for 72 hours and destroyed 80 completely. The results with 0·01 per cent. of the sulphone were slightly better than those with 0·01 per cent. of the sulphanilamide.

In another experiment with human blood (N. McL.), 120,000 cocci were destroyed by 0·01 per cent. of the sulphone, whereas with a similar concentration of sulphanilamide 12,000 were destroyed and the growth of 120,000 delayed for 48 hours; 120 grew freely in the control, and 12 were destroyed.

In non-streptococcal infections.—Preliminary experiments indicate that the diaminosulphone (2 mg. doses) is considerably more effective than sulphanilamide (40 mg. doses) in prolonging the lives of mice infected with pneumococci, but it is as yet uncertain whether mice can be completely cured. In the treatment of typhoid infections, the diaminosulphone is less effective in doses of 2 mg. than sulphanilamide in doses of 25 mg. These differences in therapeutic efficiency appear to be associated with the fact that a prolonged action of the drug is required for protection against pneumococcal infections in mice, and a rapid action is necessary for protection against typhoid infections (Buttle et al. 1937). The diaminosulphone is also effective in staphylococcal infections.

DISCUSSION

When patients are treated with sulphanilamide it is necessary to give large doses by mouth. This is sometimes inconvenient or difficult. It would, therefore, be of interest if a compound could be discovered which, even when given in smaller doses, would be as efficient as sulphanilamide in treatment.

The results presented in this paper show that 4:4′diaminodiphenylsulphone is much more active than sulphanilamide in curing streptococcal infections of mice, and that, while it is more toxic for mice than the latter compound, it is not more toxic for rabbits and monkeys, except that it causes methæmoglobinæmia more readily in the monkey. When the diaminosulphone is added directly to monkey or human blood in vitro it appears to be slightly more effective than sulphanilamide. Further, when the drugs are given by mouth to normal monkeys the maximum bactericidal effects obtained in the blood are of the same order in each case, although the action of the diaminosulphone is more persistent. In view of these facts it is somewhat difficult to understand why mouse infections are cured by doses of the diaminosulphone so much smaller than those required with sulphanilamide. The latter is absorbed and excreted very quickly by the mouse, the concentration in the blood falls to about one-tenth of its initial value in 7 hours, and to one-hundredth of this value in 13 hours; it seems probable, therefore, that there is not a uniformly high bactericidal effect. The experiment

with the monkey suggests that the bactericidal effect of the sulphone, on the other hand, is maintained. This persistence of the bactericidal effect may account, in part, for the difference between the drugs, but it seems unlikely that it is the only factor concerned. It is highly improbable that either the diamino- or the dinitro-sulphone could give rise to *p*-aminobenzenesulphonamide in the body, and their activity is of special interest since it indicates that streptococcicidal activity is not confined to drugs which contain, or could easily produce, substances containing a sulphonamide group.

SUMMARY

1. 4:4′diaminodiphenylsulphone (diaminosulphone) is active in curing streptococcal infections of mice in doses of about one-hundredth of those required with *p*-aminobenzenesulphonamide (sulphanilamide); it is, however, twenty-five times as toxic. The drug is not more toxic than sulphanilamide in normal rabbits or monkeys, except that it is more active in producing methæmoglobinæmia in the latter animal.

2. The corresponding dinitro compound (dinitrosulphone) is not so toxic to mice as sulphanilamide and its antistreptococcal activity in mice is not inferior to that of the latter substance.

We have to thank Mr. W. H. Gray for the preparation of the dinitrosulphone, Dr. J. W. Trevan for his help and criticism, and Mr. H. Proom for estimating the sulphone and sulphanilamide in the specimens of urine and blood.

Note.—Since the above paper was written Dr. F. Nitti of the Pasteur Institute, Paris, has kindly written to us saying that he has been working independently with the dinitro compound, and that his results are in general agreement with ours.

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BIRTH-RATE IN SOVIET UNION.—According to official reports, the birth-rate in Soviet Russia is steadily increasing. Last January the number of births registered was 21·7 per cent. higher than in January, 1936, and in the first quarter of this year it was about 30 per cent. higher than in the corresponding quarter of 1936. Of the Union republics, the Ukraine records the largest increase for this quarter—namely, 70 per cent. Up to April 1st the local authorities had effected transfers of 566 million roubles for the payment of allowances to mothers of large families. The number of mothers in the country receiving these allowances is given as 270,000.

ERYSIPELAS TREATED WITH PRONTOSIL

BY G. E. BREEN, M.D. N.U.I.
AND
IAN TAYLOR, M.B., M.R.C.P. Lond., D.P.H.
SENIOR ASSISTANT MEDICAL OFFICERS AT THE NORTH-EASTERN FEVER HOSPITAL, LONDON

EACH of the preparations of the Prontosil group has been used in the treatment of [illegible] it appeared. Of the early publicati[illegible] mention may be made of the [illegible] and Huguenin (1936) who [illegible] erysipelas, beginning in M[illegible] that apart from rare excep[illegible] and local amelioration t[illegible] similitude. Eight of the [illegible] a year, all of whom [illegible] Tonndorf (1936) reports [illegible] one relapse.

The route of administra[illegible] may be varied to suit indi[illegible] the oral route has received [illegible] recent experimental work of M[illegible] Cutting (1937) with para-amino[illegible] These workers found that the con[illegible] blood of dogs does not mount quicker or higher after subcutaneous injection than after oral administration. Absorption by the gastro-intestinal tract is complete in four hours; and two or three days elapse after discontinuation before the body is free of the drug.

RESULTS

The present consecutive series consists all told of 46 cases. Of these all but 5 were examples of the facial variety. The diagnosis was made on purely clinical grounds. No bacteriological confirmation was sought or considered necessary. Prontosil in one or other form was given to 35, and various other forms of therapy to 10. All cases were in addition painted locally twice daily with a mixture of glycerin and ichthyol. In the whole series there were 2 deaths. One was a man aged 71, who was admitted in a moribund state with gangrene of the nose, cheeks, eyelids, forehead, and scalp (at sight of which an attendant fainted). He was obviously beyond the reach of any therapeutic measure or agent and died within 48 hours; he is omitted from either series. The other was also a man aged 71, admitted with sharp erysipelas of the left hand and forearm, which responded promptly to treatment with Prontosil Album. Unfortunately five days after admission a cerebral hæmorrhage supervened, and death occurred within 24 hours.

An analysis of the records of the remainder of the patients is illuminating. Admittedly 10 controls are much too few for even so small a series as this one; nevertheless the evidence they afford cannot be disregarded, especially when it is considered that clinically they were the milder cases and were purposely selected for that reason. Summarised the results are as follows:—

Of 35 cases treated by prontosil from admission, 33 had regressed, 1 had spread, and 1 was stationary 48 hours later. There was one subsequent relapse. Of 10 cases not treated with prontosil 4 had regressed, 5 had spread, and 1 was stationary 48 hours later. There were no relapses (Fig. 1). Of the five no-prontosil cases which had spread 3 were subsequently treated with prontosil, and within 48 hours they had also regressed.

The effect on the temperature is shown by the composite graph in Fig. 2, and on the pulse by the graph in Fig. 3. It will be seen that the average temperature of the prontosil cases fell to normal or below in 48 hours, whereas the average of the other cases remained above normal. As regards the pulse, the advantage lies with the no-prontosil group, but it has to be remembered that they were regarded clinically as milder cases, and this is reflected in the lower temperature and pulse-rate on admission.

The cases are given in age-groups in the Table. It will be noticed that of 6 cases in the 50–65 no-prontosil group 3 spread, while of a similar number in the prontosil group all regressed. Of 9 cases in the over-65 prontosil group none spread and only one was stationary, the other 8 having subsided; whereas the solitary no-prontosil case in the same age-group was noted as stationary.

Turning to the prontosil group as a whole a further noteworthy fact emerges. The drug was administered by mouth in all but 2 cases. Two five-grain tablets of prontosil album three times daily was the ordinary adult dose, smaller doses proportionately to body-weight being given to children. In two cases, however—one a baby of 7 months who objected to the inclusion of the powdered tablets in his feeds, and the other an adult female of 69 who was comatose on admission and for some days later—the drug had to be administered intramuscularly in doses of 5 c.cm. The baby was the only case of spread after 48 hours recorded in the prontosil series, and the spread was slight and of short duration; the adult was the only prontosil case reported as stationary after the same period. She subsequently developed lung abscesses on both sides; that on the left cleared up, that on the right persisted. (A report of this case is to appear elsewhere.)

The single relapse recorded occurred in a young adult female. The attack was a moderate one and her response to treatment by tablets was so prompt that the drug was discontinued after three days. She was about to be discharged on the tenth day when the relapse occurred. This yielded so promptly to a resumption of treatment that she was actually discharged a week later. In this connexion Tonndorf cites a similar case following five days medication.

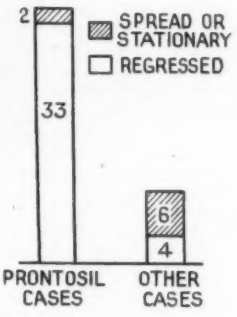

FIG. 1.—Effect of prontosil on the progress of the disease.

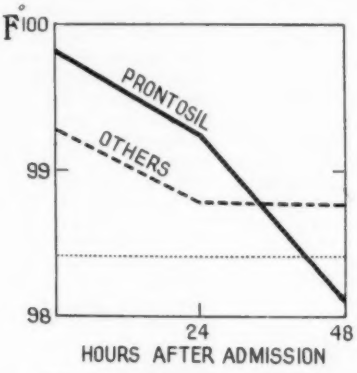

FIG. 2.—Average temperature chart.

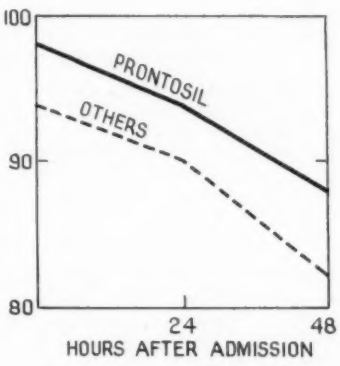

FIG. 3.—Average pulse-rate chart.

COMPARISON OF RESULTS

Age-group ..	0–5	5–15	15–30	30–50	50–65	Over 65
PRONTOSIL CASES						
Cases	2	3	8	7	6	9
Regressed ..	1	3	8	7	6	8
Stationary ..	—	—	—	—	—	1
Spread ..	1	—	—	—	—	—
Relapse ..	—	—	1	—	—	—
OTHER CASES						
Cases	—	—	3	—	6	1
Regressed ..	—	—	1	—	3	—
Stationary ..	—	—	—	—	—	1
Spread ..	—	—	2	—	3	—
Relapse ..	—	—	—	—	—	—

The average length of stay in hospital in the prontosil cases was 18·4 days, which compares favourably with the figure of 23·8 days in the other series.

Both series were remarkably free from complications. A moderate degree of cervical adenitis was noted on admission in a number of cases. One in particular already referred to presented in addition corneal ulceration with much œdema of the lids, a severe stomatitis, laryngitis, and pneumonia. Pulmonary abscesses subsequently developed. There was a notable absence of toxæmia, and her general condition improved so much that she was transferred to a thoracic unit for further treatment.

DISCUSSION

With the small number of cases and controls at our disposal it would be folly to dogmatise; nevertheless a few tentative conclusions may be offered.

Prontosil is of undoubted value in the treatment of erysipelas. The drug is best administered by mouth. It is necessary for the patient to receive repeated doses in order to maintain the requisite concentration, and these are more easily administered by mouth than by repeated injections.

The dosage in our series appears to be adequate. It may be expected to produce a favourable result in about 48 hours—i.e., when about 60 grains have been ingested. No obviously untoward results followed from this dosage or mode of therapy. The drug ought to be persisted in for about a week. (Tonndorf suggests ten days.)

It has little or no effect on local septic lesions which may have been the starting point of the attack.

with the monkey suggests that the bactericidal effect of the sulphone, on the other hand, is maintained. This persistence of the bactericidal effect may account, in part, for the difference between the drugs, but it seems unlikely that it is the only factor concerned. It is highly improbable that either the diamino- or the dinitro-sulphone could give rise to *p*-aminobenzenesulphonamide in the body, and their activity is of special interest since it indicates that streptococcicidal activity is not confined to drugs which contain, or could easily produce, substances containing a sulphonamide group.

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EACH of the preparations of the Prontosil group has been used in the treatment of erysipelas as it appeared. Of the early publications on this subject mention may be made of the work of Meyer-Heine and Huguenin (1936) who treated 150 cases of erysipelas, beginning in May, 1935. They found that apart from rare exceptions a fall of temperature and local amelioration took place with impressive similitude. Eight of their cases were infants under a year, all of whom were successfully treated. Tonndorf (1936) reports 22 prompt successes with one relapse.

The route of administration of these preparations may be varied to suit individual cases. The use of the oral route has received strong support from the recent experimental work of Marshall, Emerson, and Cutting (1937) with para-aminobenzenesulphonamide. These workers found that the concentration in the blood of dogs does not mount quicker or higher after subcutaneous injection than after oral administration. Absorption by the gastro-intestinal tract is complete in four hours; and two or three days elapse after discontinuation before the body is free of the drug.

RESULTS

The present consecutive series consists all told of 46 cases. Of these all but 5 were examples of the facial variety. The diagnosis was made on purely clinical grounds. No bacteriological confirmation was sought or considered necessary. Prontosil in one or other form was given to 35, and various other forms of therapy to 10. All cases were in addition painted locally twice daily with a mixture of glycerin and ichthyol. In the whole series there were 2 deaths. One was a man aged 71, who was admitted in a moribund state with gangrene of the nose, cheeks, eyelids, forehead, and scalp (at sight of which an attendant fainted). He was obviously beyond the reach of any therapeutic measure or agent and died within 48 hours; he is omitted from either series. The other was also a man aged 71, admitted with sharp erysipelas of the left hand and forearm, which responded promptly to treatment with Prontosil Album. Unfortunately five days after admission a cerebral hæmorrhage supervened, and death occurred within 24 hours.

An analysis of the records of the remainder of the patients is illuminating. Admittedly 10 controls are much too few for even so small a series as this one; nevertheless the evidence they afford cannot be disregarded, especially when it is considered that clinically they were the milder cases and were purposely selected for that reason. Summarised the results are as follows:—

Of 35 cases treated by prontosil from admission, 33 had regressed, 1 had spread, and 1 was stationary 48 hours later. There was one subsequent relapse. Of 10 cases not treated with prontosil 4 had regressed, 5 had spread, and 1 was stationary 48 hours later. There were no relapses (Fig. 1). Of the five no-prontosil cases which had spread 3 were subsequently treated with prontosil, and within 48 hours they had also regressed.

The effect on the temperature is shown by the composite graph in Fig. 2, and on the pulse by the graph in Fig. 3. It will be seen that the average temperature of the prontosil cases fell to normal or below in 48 hours, whereas the average of the other cases remained above normal. As regards the pulse, the advantage lies with the no-prontosil group, but it has to be remembered that they were regarded clinically as milder cases, and this is reflected in the lower temperature and pulse-rate on admission.

The cases are given in age-groups in the Table. It will be noticed that of 6 cases in the 50–65 no-prontosil group 3 spread, while of a similar number in the prontosil group all regressed. Of 9 cases in the over-65 prontosil group none spread and only one was series, and the spread was slight and of short duration; the adult was the only prontosil case reported as stationary after the same period. She subsequently developed lung abscesses on both sides; that on the left cleared up, that on the right persisted. (A report of this case is to appear elsewhere.)

The single relapse recorded occurred in a young adult female. The attack was a moderate one and her response to treatment by tablets was so prompt that the drug was discontinued after three days. She was about to be discharged on the tenth day when the relapse occurred. This yielded so promptly to a resumption of treatment that she was actually discharged a week later. In this connexion Tonndorf cites a similar case following five days medication.

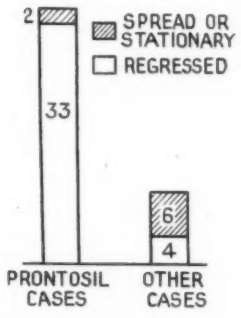

FIG. 1.—Effect of prontosil on the progress of the disease.

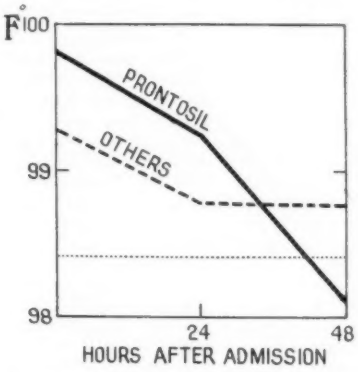

FIG. 2.—Average temperature chart.

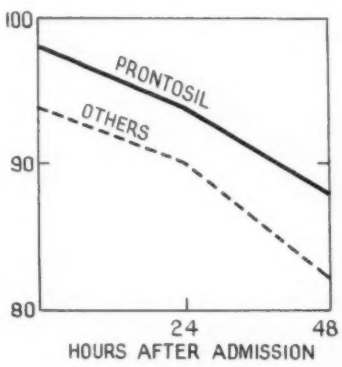

FIG. 3.—Average pulse-rate chart.

stationary, the other 8 having subsided; whereas the solitary no-prontosil case in the same age-group was noted as stationary.

Turning to the prontosil group as a whole a further noteworthy fact emerges. The drug was administered by mouth in all but 2 cases. Two five-grain tablets of prontosil album three times daily

COMPARISON OF RESULTS

Age-group ..	0–5	5–15	15–30	30–50	50–65	Over 65
PRONTOSIL CASES						
Cases	2	3	8	7	6	9
Regressed ..	1	3	8	7	6	8
Stationary ..	—	—	—	—	—	1
Spread ..	1	—	—	—	—	—
Relapse ..	—	—	1	—	—	—
OTHER CASES						
Cases	—	—	3	—	6	1
Regressed ..	—	—	1	—	3	—
Stationary ..	—	—	—	—	—	1
Spread ..	—	—	2	—	3	—
Relapse ..	—	—	—	—	—	—

was the ordinary adult dose, smaller doses proportionately to body-weight being given to children. In two cases, however—one a baby of 7 months who objected to the inclusion of the powdered tablets in his feeds, and the other an adult female of 69 who was comatose on admission and for some days later—the drug had to be administered intramuscularly in doses of 5 c.cm. The baby was the only case of spread after 48 hours recorded in the prontosil

The average length of stay in hospital in the prontosil cases was 18·4 days, which compares favourably with the figure of 23·8 days in the other series.

Both series were remarkably free from complications. A moderate degree of cervical adenitis was noted on admission in a number of cases. One in particular already referred to presented in addition corneal ulceration with much œdema of the lids, a severe stomatitis, laryngitis, and pneumonia. Pulmonary abscesses subsequently developed. There was a notable absence of toxæmia, and her general condition improved so much that she was transferred to a thoracic unit for further treatment.

DISCUSSION

With the small number of cases and controls at our disposal it would be folly to dogmatise; nevertheless a few tentative conclusions may be offered.

Prontosil is of undoubted value in the treatment of erysipelas. The drug is best administered by mouth. It is necessary for the patient to receive repeated doses in order to maintain the requisite concentration, and these are more easily administered by mouth than by repeated injections.

The dosage in our series appears to be adequate. It may be expected to produce a favourable result in about 48 hours—i.e., when about 60 grains have been ingested. No obviously untoward results followed from this dosage or mode of therapy. The drug ought to be persisted in for about a week. (Tonndorf suggests ten days.)

It has little or no effect on local septic lesions which may have been the starting point of the attack.

were not urgent, there was every opportunity for careful preparation of the patient. Moreover, tuberculosis of the kidney was not necessarily a progressive disease; it would be curious if the kidney were the only organ in the body that did not show resistance to tubercle. Once the calyces were ulcerated and the pelvis was involved, the lesions were progressive; but even cases of this type could in certain circumstances undergo cure. He did not often do pyelography; sometimes it did not teach as much as did careful examination of urine drawn off by ureteric catheter. If such urine showed pus—whether with or without tubercle bacilli—the kidney should be regarded with suspicion. If a ureter was thickened he removed it, almost throughout its length.

Mr. CARVER, in reply, agreed that in established renal tuberculosis infection could spread to the epididymis, prostate, and vesicle from the urethra. He believed the infection often travelled by the blood stream; often the primary lesion was in the epididymis. When in doubt about a kidney sinus he used ascending pyelography.

BRITISH PSYCHOLOGICAL SOCIETY

Dr. H. CRICHTON-MILLER took the chair at a meeting of this society held at the Tavistock Clinic on May 25th, when Prof. WILLIAM MCDOUGALL delivered an address on the relations between

Dissociation and Repression

These relations, he said, constituted one of the fundamental problems in psychology. Both words were widely used and both were doubtless needed; they probably stood for phenomena of two different orders requiring at least two quite distinct theories for their interpretation. This view was, however, not generally accepted. The followers of Janet had as a rule no use for the concept of repression, while most of the followers of Freud, Jung, and Adler admitted no need for the word "dissociation." This continuing division of opinion might, thought Prof. McDougall, be properly regarded as a symptom of the sickness of psychology—a dissociative symptom, or a disorder due to conflict and repression. It was in any case a notable instance of lack of integration of the science of human nature. Many of the more eclectically minded psychologists—who were fortunately more numerous in Great Britain than in any other country—used both words as descriptive terms and recognised the need for two corresponding theories.

Study and experience had led Prof. McDougall to treat repression as a dynamic factor which in many cases prepared the way for and led to dissociation. Assisted by various friendly but vigorous opponents of his views he had gradually come to realise that he was confounding, under the single term "dissociation," at least two factors which ought to be distinguished—dissociation and disintegration. The first step towards a solution of the problem must be to distinguish the various meanings of the word "dissociation" as used by various authors. Here one must bear in mind the distinguishable conditions of mental integrity or unity, expressed by the harmonious functioning of mind in its normal healthy instances. The study of the normal had been too much neglected in psychology.

A psychologist who regarded the structure of the developed mind as the product of the operation of a single powerful principle, that of association, naturally saw in dissociation the one abiding principle of mental disorder. Some such logical principle seemed to have invaded Janet's doctrine of dissociation. Though few workers nowadays accepted the old associational doctrines, much uncertainty was felt concerning the principles which must replace or accompany association as the organising processes by which the sane mind became a harmoniously working entity. In his "Outline of Psychology" Prof. McDougall had described three principles which governed his doctrine of the mind's structure. He had distinguished two great aspects of the mind's organisation. The first of these was the logical structure, corresponding to the logical relations of the cosmos in general. It grew in two ways: mainly by differentiation of germs of mental structure—mental dispositions—achieved by innumerable acts of analytical discrimination, and secondly by acts of synthetic apperception. The other aspect of mental organisation was the historical aspect, the total structure of the mind. This was built up by innumerable acts of association resulting in the formation of associative bonds between those units of structure which grew up by discrimination and apperceptive synthesis.

BREAKDOWN OF THE HISTORICAL STRUCTURE

There were therefore three distinct processes of growth and three corresponding modes of failure of development and perhaps of breakdown of the products of those three processes. The principal mode of failure for Prof. McDougall's present purpose was, he said, the breakdown of the historical structure. This was what he understood by dissociation in the strict sense: an undoing or weakening of the links of association. It was illustrated by cases of complete absence of memory for all concrete facts but complete retention of the use of language and the understanding of things, so that the patient could conduct himself like a perfectly normal person, his chief trouble being that he did not know the names of things, which were attached to the things themselves by associative process. There were also cases in which the function of the logical structure of the mind was arrested. These were the cases of extreme regression in which the patient became like an unborn babe, understanding nothing. The mind was regarded, according to this view, as built up of distinguishable units of structure or mental dispositions, cognitive and conative, which underwent differentiation in various conjunctions and became smaller and larger systems, linked to one another by a multitude of associative bonds. It was a fair assumption that the structure of the mind could be validly translated into terms of neurones and cerebral structure, the mental dispositions being regarded as functional groups of neurones or systems of such groups. It was also a fair assumption that the associative links between such systems were represented in the structure of the brain. Further, mental dissociation might be assumed to involve some kind of impairment of these neural cross-connexions. A further and much more questionable and speculative assumption was, however, that neural continuity was the ground of the unity of consciousness; or, in other words, that one condition of unity of consciousness was continuity of the field of energy changes going on in the brain at any one moment. In the latter form this assumption was confidently made by the representatives of the Gestalt school of psychology, and was carried to an extreme in the very questionable doctrine of isomorphism.

DYNAMIC RELATIONS OF THE MIND

In writing his "Outline of Abnormal Psychology" Prof. McDougall had, he said, found it necessary to recognise a fourth kind of functional relations between various parts of the total structure of the mind: relations of dominance and subordination. These relations made of the total structure not merely a vast complex system of units all so connected that they might reciprocally influence one another, but also a unity in a further and a higher sense, an hierarchical system. They integrated the whole organisation of the mind and made of it a harmoniously working unity. They could not be translated, like the other relations, into terms of neural or cerebral structure. They were strictly dynamic relations. It was very difficult to suggest any adequate picture of corresponding relations between neural systems. These dynamic relations were essentially moral relations, or at any rate mainly relations which perhaps had no neural equivalents. For this reason Prof. McDougall had felt compelled to describe the mind as made up of monads, in the sense of relatively independent psychic units. He regarded the integration of the human personality as consisting in the main, and most importantly, of its maintenance as one harmonious whole by this system of dynamic relations of dominance and subordination. The other structure relations he regarded as adjuvant, as instrumental aids to or conditions of integration. This system was even more important in psychotherapy than the other three.

At this point he had begun to connect the theory of dissociation with the theory of repression. To reconcile and combine the first three systems with the fourth was a fundamental problem, and the difficulty of doing so was the chief barrier which still divided psychologists into those who thought of a neurotic disorder chiefly in terms of dissociation, and those who thought of it chiefly in terms of repression. Both ways of thinking were right, and to combine them only required that certain assumptions should be boldly and consistently carried through. A great army spread over a wide front consisted of many units, each with its own internal organisation, organised in turn within larger units. These units corresponded to the mental systems or dispositions. Connexion between the units of an army was maintained by a multitude of field telephone wires; these represented the historical associative structure of the mind, which linked up all the mental dispositions. So long as the military units maintained their normal internal organisation and the telephone system was in good condition, the various parts of the army were in touch with one another and the army was a whole. A general failure of the telephonic system through a weakening of the electrical supply would correspond to the general relative dissociation of cerebral hemispheres which took place in sleep, hypnosis, fatigue, and intoxication. Serious impairment of the lines or receiving instruments of one unit would represent local cerebral dissociation cutting out one special function or group of functions.

DISINTEGRATION WITHOUT DISSOCIATION

The mere effective functioning of the telephonic system did not, however, make the army a whole in the higher sense. The telephone wires might carry information about the activities of each unit, but they might also carry mere gossip or argument. The higher form of unity in a vastly complex system was best and perhaps only attained and maintained by the organisation of an hierarchical system of dominance and subordination over and above all the telephonic intercommunication. The telephone system might be working perfectly while the whole army was in a state of complete anarchy. Similarly, the associative mechanism of the mind might be unimpaired while the mental integrity was broken down through a failure of the dynamic relations of dominance and subordination. There was disharmony without dissociation.

Relations of this sort were fundamental in the social system, even in that of animals. Their extreme and true prototype was the relation between the hypnotist and his subject. There was no physical compulsion but a purely moral compulsion or influence, which nevertheless was highly effective. Prof. McDougall did not think that the dynamic relationship was maintained by the mechanisms of association. Two other possibilities suggested themselves. In an army, headquarters might control all subordinate systems by a special set of telephone wires or by wireless. Similarly, these dynamic relations might be maintained in the mind by means of special associational links or by a telepathic or direct connexion. Critics who found this hypothesis too speculative might be able to entertain that of special nerve paths or fields of energy not confined to the substance of the neurones.

The next question which arose was how the authority of one part of the mind over the others was attained. The status of a warrior king depended only in small measure on his own qualities, and much more on tradition, heredity, or custom. He symbolised and controlled the energy of the whole system and could bring it to bear in or against any part. The organisation of an army, which rested ultimately on the same principles, provided a close analogy with the hierarchical organisation of the mind.

Dissociation, therefore, resulted from failure of the associative mechanism or structure of the mind. Conflict and repression were disorders of the dynamic or moral relations between dominant and subordinate parts of the mind, and led not merely to dissociation but to disintegration. It might be better to use the term "disharmony" to describe the disorder of the dynamic relation, and to reserve the term "disintegration" for cases in which both the structural and the dynamic systems of relations were disordered, when conflict and repression had led to severe dissociation perhaps amounting to multiple personality. In many of the graver disorders these fundamental forms of breakdown were certainly combined. In an army a single unit might lose touch with the main body through breakdown of its telephonic communication; this was simple dissociation, as in simple amnesias, anæsthesias, and paralyses. Secondly, the unit might refuse to obey orders; this was conflict. Thirdly, the opposition of the unit might be overwhelmed and nullified by superior force; this was repression. Fourthly, the rebellion might result in breakdown of communications so that the rebels were isolated. In the body a rebellious unit might be isolated physically as well as morally; here repression had led to dissociation with consequent disintegration. The isolated unit might continue to struggle against the superior force as best it could from time to time.

In conclusion, Prof. McDougall said that he accepted the concept of general relative dissociation of the brain and of localised cerebral dissociations underlying various functional defects. He distinguished, however, between disharmony and disintegration, the latter of which in many cases involved dissociation as a secondary result of conflict and repression.

REVIEWS AND NOTICES OF BOOKS

The Facial Neuralgias

By WILFRED HARRIS, M.D., F.R.C.P., Consulting Physician to St. Mary's Hospital, and Physician to the Hospital for Epilepsy and Paralysis, Maida Vale. London: Humphrey Milford, Oxford University Press. 1937. Pp. 105. 7*s*. 6*d*.

IN this little book Dr. Wilfred Harris surveys his vast experience which now extends over nearly 30 years in the treatment of the many varieties of pain in the face. The style of writing, which amounts almost to a collection of aphorisms, will prove to be of the greatest value and delight to those who already know something about the difficulty of interpreting and treating facial neuralgia; the uninitiated may find it necessary to revise their knowledge not only of anatomical landmarks but of nerve distributions before they seek clinical information from this book and even then may fail to appreciate the significance of the brief comments made on the various kinds of pain. The great clinician often makes up his mind by intuition rather than by reasoning, and it may be difficult or even impossible for him to explain exactly how he assesses certain factors, especially the psychological ones, in any given case. This difficulty is greatest when symptoms are all he has to go upon, and the book shows how even the very elect may sometimes be deceived.

However vague may be our conception of their underlying pathology we must recognise Dr. Harris's outstanding contribution to the treatment of the facial neuralgias, of which only trigeminal tic is described in detail. He gives many examples of the beneficial effect of alcohol injection for other conditions besides true trigeminal tic, and he also mentions contra-indications to its use. It is not possible to teach in writing the master's touch, and though we can find from Dr. Harris's directions the point on the face at which the needle should be inserted, it is only by practice that we may hope to know where it ought to go. The book necessarily shows us what can be done rather than how to do it, and it leaves us deeply impressed.

Accidents and Their Prevention

By H. M. VERNON, M.A., M.D., Member of Technical Advisory Board, National Institute of Industrial Psychology. London: Cambridge University Press. 1936. Pp. 336. 15*s*.

THE earliest studies of the incidence of accidents in industry showed that some persons were more liable than others to have accidents, and to this phenomenon Eric Farmer applied the term "accident-proneness." Accident-prone people make up about 25 per cent. of the population, and this group accounts for about 75 per cent. of all accidents. Another 25 per cent. of the population are considered to be accident-free, whereas the remaining 50 per cent. account for about 25 per cent. of all accidents. The doctrine of accident-proneness is still contested by a number of practical works managers in charge of large groups of workmen, but from a statistical point of view it is becoming almost an axiom. Dr. Vernon's method of approach to the problem of accident prevention is largely a statistical one. His book contains among other things a comprehensive review of the work and reports of the Industrial Health Research Board to which he has himself made valuable contributions. As he says, "everyone must be acquainted with persons who are clumsy with their hands, and are liable to break almost every article they touch . . . it is generally assumed that their accident liability is due to sheer carelessness and lightheartedness, and that they could easily avoid it by taking more thought and care." But some persons retain this liability to accidents under all circumstances; it is associated with a greater tendency to stay away from work on account of illness, and is observed more often amongst unskilled than among skilled workers. In industry a reduction in the frequency of accidents has resulted from the removal from dangerous occupations of persons judged to be accident-prone, but it is not always easy to identify them. Psychological tests devised for the purpose have not proved entirely satisfactory, and Dr. Vernon does not seem hopeful that they ever will be; but it is encouraging to learn that accident-proneness can be largely overcome by instruction and training.

The practical man is more ready to accept the view that any factor which lowers the general health tends to increase the liability to accidents, though it is difficult to obtain tangible evidence in its support. Fatigue and the taking of alcohol tend definitely to increase accident liability. Good environmental conditions, such as comfortable air temperatures, well-lit workrooms, and a reasonable rather than rushed speed of production, all influence the accident rates favourably. The influence of night work on the accident rates is less obvious, but Dr. Vernon cannot doubt that night work is less suited than day work to the physiological rhythm of the human organism. He discusses road accidents at some length in the light of analyses of their incidence, and this section of his book is worthy of serious study by those interested in the preservation of their own lives and those of their fellow men. His main conclusion in relation to the prevention of accidents in general is that the most important measure is to educate the people of all ages and classes and to instil in them a safety habit of mind.

The Lung

By WILLIAM S. MILLER, D.Sc., M.D., Emeritus Professor of Anatomy, University of Wisconsin. London: Baillière, Tindall and Cox. 1937. Pp. 210. 34*s*.

DURING his long and productive career as an anatomist Dr. Miller has perhaps done more to elucidate the finer architecture of the lung than any other investigator. His own contributions, embodying work published during five decades, bulk large in this monograph, but they are modestly woven into accounts of other people's work in such a way as to provide a complete and well-proportioned story. Probably Dr. Miller's greatest single contribution to the subject has been in demonstrating the morphology, topography, and function of the intrapulmonic lymph channels and depôts. This vastly important system of delicate lymphatics is here delineated in amazing detail. The finer divisions of the air passages, the ramifications of bronchial musculature, and the terminations of pulmonary blood-vessels and nerves are also effectively represented. The structural obscurities of the lung have not even now been finally cleared up. The author is, indeed, at pains to show the need for further research in several subdivisions of his subject. He has himself set down a few conclusions which may not escape challenge. Most

readers will probably accept his dictum that the "interalveolar pore" is only an artefact, and will regard as conclusive his demonstration of a continuous lining membrane within the alveoli, but they may not agree that this membrane is necessarily epithelial. Some will be disappointed that greater attention has not been given to cytological detail; for instance the common mononuclear phagocyte is barely mentioned. Unquestionably, however, the work as a whole will meet with widespread appreciation. It is a monumental treatise, unique in its field.

British Encyclopædia of Medical Practice

Vol. III. By Various Authors. Under the general editorship of Sir HUMPHRY ROLLESTON, Bart., G.C.V.O., K.C.B., M.D., D.Sc., Emeritus Professor of Physic, Cambridge. With the assistance of Prof. F. R. FRASER, M.D., F.R.C.P.; Prof. G. GREY TURNER, M.S., F.R.C.S.; Prof. JAMES YOUNG, D.S.O., M.D., F.R.C.S.E.; Sir LEONARD ROGERS, K.C.S.I., F.R.C.P., F.R.C.S., F.R.S.; and F. M. R. WALSHE, O.B.E., M.D., D.Sc., F.R.C.P. London: Butterworth and Co. 1937. Pp. 681. 35*s*.

CONTINUING its exhaustive survey of the entire field of modern medical practice, the third volume of this work opens with an article on cataract by Sir Stewart Duke-Elder and ends with one on diseases of the diaphragm by John D. Comrie. Some of the articles dealing with rare, obscure, or tropical diseases will be of interest mainly to the specialist, but others provide plenty of material useful to the general practitioner. In the forefront of these is Sir Arthur Hurst's article on constipation wherein he continues to fight the good fight against the widespread habit of taking purgatives. His wise words might well be taken to heart by those inside as well as outside the profession: "The vast army of hypochondriacs who are never happy unless their stools conform to an ideal which they have invented for themselves, can be cured only by making them realise that fæces have no standard size, shape, consistence or colour; they may then be ready to follow the example of the dog rather than that of the cat and never look behind them." Two other important articles, one on coma by Sydney Smith and W. Ritchie Russell, and one on concussion and compression by L. R. Broster should help in many a situation where differential diagnosis is both vital and difficult. H. W. Gordon writes on the less momentous subject of chilblains; he summarises the modern methods but offers no royal road to success in the treatment of this tiresome and common minor malady. Discussing the treatment of the common cold A. H. Douthwaite does suggest a new remedy, unfortunately not yet available to the many—to fly for half an hour at a height of 8000 ft. In his article on coliform bacillus infections Clifford Morson details the uses and limitations of mandelic acid therapy. Chassar Moir's article on pelvic cellulitis, however, must have been written before prontosil was introduced in the treatment of cases streptococcal in origin.

An interesting and significant innovation in a work of this kind is the inclusion of a sound and well-tabulated article on contraception by C. P. Blacker and Joan Malleson, who point out (1) that lactation offers very poor protection against pregnancy, and (2) that pregnancy may occur after the menopause, even several months after menstruation has ceased. The only contraceptive methods recommended are those in use at recognised birth-control clinics, and to protect himself against the extravagant claims made for proprietary contraceptives the practitioner is urged to write to the National Birth Control Association for a list of the more efficient productions on the market. Pædiatrics is represented by several articles; Kenneth H. Tallerman and Alice Campbell Rose write on child health and welfare, and Reginald Miller on cœliac disease. Writing on child guidance William Moodie, in discussing importance to children of a sympathetic environment, observes drily that when dealing with cases of child-delinquency it is sometimes among the parents rather than among the children that the real patient is to be found. In the sphere of gynæcology M. J. Stewart and Alan Brews write on chorionepithelioma and hydatidiform mole and James Young collaborates with the general editor in an article on the climacteric and its disorders. Various dermatological conditions common and uncommon receive attention ranging from the homely corn and bunion by W. J. O'Donovan, through various types of dermatitis by Arthur Whitfield and P. B. Mumford, to the redundant craw-craw by Sydney Thomson. F. M. R. Walshe contributes three articles on cerebellar disease, cerebral diplegia, and cranial nerve affections, and F. W. Watkyn-Thomas two on deafness and deaf-mutism. There are also two valuable articles on teeth, one by Alan Moncrieff on dentition and one by Sir Norman G. Bennett on dental sepsis in relation to systemic disease. The volume, which contains in all 68 articles by recognised authorities, is well up to the high standard set by its predecessors.

Practical Orthoptics in the Treatment of Squint

By KEITH LYLE, M.A., M.D., F.R.C.S., Assistant Surgeon, Royal Westminster Ophthalmic Hospital; Ophthalmic Surgeon, Metropolitan Hospital, London; and SYLVIA JACKSON, S.R.N., Senior Orthoptist, Royal Westminster Ophthalmic Hospital. London: H. K. Lewis and Co. 1937. Pp. 212. 12*s*. 6*d*.

THE comparatively recent institution of a diploma in orthoptic training for squint (conferred by the Council of British Ophthalmologists on the advice of a specially appointed board of examiners), has created a demand for text-books dealing with this subject. The volume under review has been written with a view to meeting this demand, and on the whole it fulfils its purpose in that it supplies an elementary introduction to orthoptic training suitable especially for students. The book is easy to read and gives straightforward and comprehensible descriptions of instruments and methods of examination and treatment; if these are somewhat lacking in detail they are no doubt intended to be supplemented by practical work on the part of the student. In spite of their disclaimer in the preface, the authors have not altogether succeeded in avoiding the introduction of controversial matter, and it seems regrettable, from the point of view of the student at any rate, that other principles of treatment besides those approved of at the Royal Westminster Ophthalmic Hospital have not at least been mentioned. The allocation of 40 pages—nearly a fifth of the book—to tabulated results is perhaps rather out of keeping with the character of the work; nor does the evidence supplied by these tables always seem to bear out the generalisations in the text. The final chapter on ocular torticollis is the most interesting section in so far as ophthalmologists as distinct from students of orthoptic training are concerned.

GENERAL MEDICAL COUNCIL

SUMMER SESSION, MAY 25TH–29TH, 1937

ON Tuesday, May 25th, the Council commenced the hearing of cases in which certain registered dental and medical practitioners were alleged to have committed infamous conduct in a professional respect, or to have been convicted of criminal offences by courts of justice. In accordance with custom, the Council heard these cases in public and deliberated upon their decision in camera; the public were readmitted to hear the decision announced.

Penal Cases reported by the Dental Board

The Case of William Laird, registered as of 40, Gray's-hill, Bangor, Co. Down, Dentists Act, 1921.

Mr. Laird was reported by the Dental Board of the United Kingdom for systematically canvassing for patients in November, 1936. He did not appear in answer to his notice and was not represented. The Council directed the Registrar (Mr. Michael Heseltine) to erase his name from the Dental Register.

The Case of James Sharples Hopwood, registered as of 75, Flixton-road, Urmston, Lancs, Dentists Act, 1921.

Mr. Hopwood was reported by the Board for wrongfully obtaining payment from two approved societies of £4 3*s*., and £4 11*s*. 8*d*., by means of untrue and improper certificates in dental letters falsely stating that certain dentures had been supplied and remade. He did not appear and was not represented. Mr. Harper, the Board's solicitor, read a statement forwarded by the respondent in mitigation of his offence and pleading severe domestic trouble. The Council directed the erasure of his name.

The Case of Albert Edward Lloyd, registered as of The Bungalow, North Drive, Cleveleys, Blackpool, Dentists Act, 1921.

Mr. Lloyd had also been found guilty by the Board of obtaining £3 6*s*. 6*d*. in 1934 from an approved society by means of untrue and improper certificates for a denture which he had not handed to the member; this case was reported by the Minister of Health. He had moreover been found by the Board to have undertaken in 1936 the repair of an insured person's denture although he was not qualified to do dental benefit work, and to have retained the denture until the member should pay him the sum which the society would have paid him if he had been so qualified. He did not appear and was not represented. The Council ordered his name to be erased.

The Case of John Kennedy Scotland, registered as of 15, Millbrae-crescent, Langside, Glasgow, L.D.S. R.F.P.S. Glasg., 1923.

The Board reported that Mr. Scotland had been convicted on Oct. 20th, 1936, before the Sheriff Court of Lanarkshire at Glasgow, of presenting to various chemists on 20 occasions between May 26th and Sept. 29th, 1936, fabricated prescriptions and obtaining from them quantities of morphine sulphate, which he had not been duly authorised to procure, contrary to Regulation 2 of the Dangerous Drugs (Consolidated) Regulations, 1928, and had been fined £10 or 60 days' imprisonment in default.

Mr. Scotland did not appear and was not represented, but Mr. Harper read a statement which he submitted in extenuation of his offence. The Council ordered the erasure of his name.

The Case of Edwin Spencer Tebbutt, registered as of 30, Finsbury-square, London, E.C.2, L.D.S. R.C.S. Eng., 1905.

Mr. Tebbutt had been convicted three times of drunkenness. He did not appear, but a personal friend applied for permission to be heard on his behalf, and was allowed to address the Council and lay before it his statement in mitigation, pleading prolonged ill health and financial loss. The Council directed the Registrar to erase his name.

RESTORATION TO DENTISTS REGISTER

After deliberation in camera the President announced that the name of Thomas Ross Graham had been restored to the Register.

Charges against Medical Practitioners referred from Previous Sessions

The Case of William Mervyn Crofton, registered as of 22, Park-square, London, N.W.1, M.B., B.S. 1904, R.U. Irel.; M.D. 1911, N.U. Irel., who had been summoned to appear before the Council in 1935 on charges of advertising based on press interviews and speeches eulogising the Antigen Laboratory with which he was connected. The Council had found some of the facts proved but had postponed judgment until this session.

Dr. Crofton appeared, accompanied by Mr. G. W. Pritchard, solicitor. The Medical Defence Union, which had complained, was not represented. The Council considered the testimonials produced by respondent and decided not to erase his name.

Dr. Crofton then accused the Council of heinous and unprofessional bias and put in a formal written complaint of their conduct of the case.

The Case of William Douglas, registered as of 282, Goldhawk-road, Shepherd's Bush, London, W.12, M.B., Ch.B. 1921, U. Edin., who had been summoned on charges of driving a car while under the influence of drink. The Council had found the charges proved in May, 1936, but had postponed judgment for a year. Dr. Douglas appeared, and had submitted the required testimonials. The Council decided not to erase his name.

The Case (adjourned from May 26th, 1936) *of David Davidson Watson*, registered as of c/o Haigh, 21, King-street, Wakefield, M.B., Ch.B. 1926, U. St. And., who had been summoned to appear as a result of convictions for driving a car while under the influence of drink. Dr. Watson attended, having submitted testimonials. His name was not erased.

The Case (adjourned from Nov. 25th, 1936) *of Walter Campbell*, registered as of 59, Jeffrey-street, Edinburgh, L.R.C.P. Edin., 1927; L.R.C.S. Edin., 1927; L.R.F.P.S. Glasg., 1927, who had also been convicted of motoring offences and of being under the influence of drink. Dr. Campbell had not appeared and the Council's solicitor had not been able to trace him. Dr. Campbell again did not appear. Mr. Harper outlined the steps he had taken to trace him. After deliberation in camera the Council decided to proceed with the case. The charges were as follows:—

That you were convicted of the following offences: (1) on Dec. 12th, 1931, at the Sheriff Court, Cupar, of being in charge of a motor-car whilst under the influence of drink, and were fined £5 or thirty days' imprisonment; (2) on Dec. 17th, 1931, at Dunfermline Police-court, of causing a motor-car to stand longer than was necessary for loading or unloading goods or for taking up or setting down passengers, and were fined 25*s*. or ten

days' imprisonment; and of the following misdemeanours: (3) on August 29th, 1935, at the Hull City Police-court, of driving a motor-car without due care and attention, and were fined £15 and £3 13*s.* 6*d.* costs, or fifty-one days' imprisonment, and were disqualified from holding a driving licence for one month; and (4) on Sept. 1st, 1936, at the Leeds West Riding Court: (*a*) of driving a motor-car whilst under the influence of drink (date of offence August 16th, 1936), and were fined £15 and £5 16*s.* costs, or two months' imprisonment in default, and were disqualified for holding a driving licence for twelve months; (*b*) of driving a motor-car in a manner dangerous to the public (date of offence August 16th, 1936), and were fined £10 or one month's imprisonment in default.

Mr. Harper described the cases in detail and after prolonged deliberation in camera the President announced that the charges had been found proved, but judgment had been postponed for six months subject to the usual proviso; Dr. Campbell would be well advised to attend next session.

The Case (postponed from Nov. 25th, 1936) *of Ernest Stanley O'Sullivan*, registered as of 12, Dunowen-gardens, Cliftonville, Belfast, L., L.M. 1928, R.C.P. Irel.; L., L.M. 1928, R.C.S. Irel., who had been summoned to appear before the Council on the following charge:—

That you were convicted of the following misdemeanours,—viz.: (1) on June 12th, 1933, at the Stockton Borough Police-court, of being under the influence of drink whilst in charge of a motor-car, and were fined £5 and £1 1*s.* doctor's fee (date of offence June 9th, 1933); (2) On May 14th, 1936, at the City Police-court, Newcastle-on-Tyne, (*a*) of driving a motor-car whilst under the influence of drink, and were fined £10 and £9 7*s.* 6*d.* costs (date of offence May 13th, 1936); (*b*) of driving a motor-car in a manner which was dangerous to the public, and were fined £2 (date of offence May 13th, 1936); and (*c*) of using a motor-car when the brakes were not in good and efficient working order, and were fined £1 (date of offence May 13th, 1936); to all of which you pleaded guilty.

At the meeting of the Council on Nov. 25th, 1936, the solicitor to the Council had stated that he had been unable to establish communication with Dr. O'Sullivan, or to serve the notice of inquiry upon him. The solicitor had accordingly applied for the adjournment.

Dr. O'Sullivan now attended, accompanied by Mr. Oswald Hempson, solicitor, on behalf of the Medical Defence Union. Mr. Winterbottom, solicitor to the Council, put in reports of the convictions and gave details. Mr. Hempson addressed the Council, giving it Dr. O'Sullivan's assurance that he now was and would remain a total abstainer. Respondent had, he said, been extremely worried and unfit at the times of the convictions. He put in a number of testimonials. Judgment was postponed for a year.

New Penal Cases

The Case of David William Jones, registered as of 10, Belsize-lane, London, N.W.2, M.R.C.S. Eng., 1914; L.R.C.P. Lond., 1914, who had been summoned to appear before the Council on the following charge:—

That you were on Oct. 23rd, 1936, convicted at the City of Birmingham Police-court of the following misdemeanour—viz., of obtaining credit to the amount of £29 5*s.* 6*d.* from the London Midland & Scottish Railway Company by fraud, and were sentenced to four months' imprisonment in the second division, and that your appeal on Dec. 1st, 1936, against the conviction to the Birmingham Quarter Sessions was dismissed.

Mr. Harper explained that the offence had consisted of allowing a lady with whom respondent was living to issue a "dud" cheque in payment of a hotel bill; the lady had been sentenced to a month's imprisonment at the same time and had said in cross-examination that respondent had had nothing to do with the cheque. Both she and respondent had persistently stated that she had assets.

Dr. Jones asked if the lady's evidence might be heard in camera. Mr. Harper suggested calling her "Mrs. Jones." Dr. Jones said he could not call her unless she were heard in camera. The Council then went into camera, after which the President announced that the Council would postpone judgment until May, 1938, subject to the usual testimonials.

ALLEGED CARELESS CERTIFICATION

The Case of Joseph Shibko, registered as of 5, Prince of Wales-road, Swansea, L.M.S.S.A. Lond., 1926, who had been summoned to appear before the Council on the following charge:—

That being a registered medical practitioner, you on each of the following dates, namely, Jan. 24th, April 11th, May 6th, and Dec. 17th, 1936, signed and issued a certificate of incapacity for work for a person described as William Ward, whereas you had not seen or examined the said William Ward on any of such dates or at all, which certificates were untrue, misleading, and improper. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect.

There was no complainant in this case.

Dr. Shibko attended, accompanied by Mr. W. A. Macfarlane, counsel, instructed by Messrs. Le Brasseur and Oakley, solicitors, on behalf of the London and Counties Medical Protection Society.

Mr. Harper, solicitor to the Council, said that respondent had never seen Mr. Ward, who was in perfect health and at work all the time his wife was sending in certificates of incapacity supplied by respondent. Respondent, when asked for explanations, had replied by his solicitor stating emphatically that the certificates had been given by the doctor to Mr. Ward or to someone representing himself to be Mr. Ward, and the doctor had never at any time given a certificate without seeing the patient.

Mrs. W. M. Ward testified to her statutory declaration stating that she had asked at the surgery for a certificate showing that her husband was unable to work, and had been given it without comment or fee. The certificates were produced. She had not mentioned any disease and had not been asked. Her husband had never been to the surgery with her and Dr. Shibko had never been to their house. She had also received National Health certificates, but had destroyed them. In cross-examination she agreed that her husband was not a panel patient of Dr. Shibko's. She had seen the book he took the slips from but had seen no counterfoils. The five insurance certificates were at quite different times from the others. The doctor had not asked for any particulars of her husband's number or anything. The certificates had been used to obtain relief in June, 1935. Her husband had never had a day's illness. She had been convicted of receiving £33 odd in relief and had been to prison for it. She had not offered or been asked for any suggestion at any time as to what was the matter with her husband; she had simply said she wanted a certificate for him and Dr. Shibko had written it without a word more. Shown a blank certificate form, she said she had never seen such a form before. She did not know that the other form, which she recognised, was the form for giving to an employer. She knew that respondent was the poor-law doctor for the district. She had told a good many lies in her time but this was the

truth. She had never noticed if there was any number on the certificates. On the one occasion when the relieving officer had called at the house, she had told him he could not see her husband because the parson was in; this had been untrue. She had not had certificates for her daughter. The relieving officer had read the certificates. She had never sent anyone else to the surgery; nobody but herself knew anything about it. She had never paid anything.

In reply to the legal assessor, she said she had pleaded guilty at the court.

Sir Kaye Le Fleming asked what the National Health certificates were wanted for; witness said nobody had asked for them, but she had shown them to the relieving officer until he had ceased to be satisfied with them.

Mr. W. Ward testified that he had not for nine years lost a day's employment through sickness or been attended by any doctor. He had never seen respondent until they met in the police-court. He knew nothing about any certificates. After the police proceedings respondent had come up to witness at the bus stop and twice said he thought he had seen witness in his surgery; witness had twice said "You're a liar."

Cross-examined, he said he himself had obtained poor relief in 1935 and had himself been to the relieving officer for it. He knew his wife was on Dr. Shibko's list for the Public Medical Service, but did not know how many weeks she had actually paid.

Dr. Shibko testified that he was public assistance medical officer for Swansea No. 3 district, and had been interested in local government work before going there. He had a panel practice of some 1800 patients and participated in the public medical service for non-insurable persons with an income below £250, having some 300 families on his list. In addition, he had a substantial private practice. The relieving officer could aid destitution without reference to the medical officer, but when sickness was involved a special form was used. (This was the form Mrs. Ward had never seen.) He invariably used that form; there should be a query by the relieving officer if any other form were used. The other form (that on which the certificates had been given) was used only for private purposes—e.g., for a friendly society, or for an employer—and he always used the right form for the right thing. He admitted that the certificates in question had been signed by him, but he had never given one to Mrs. Ward or signed one without examining a man. He did not know Mr. Ward personally; 800 people might pass through his surgery in a week and it was impossible to call for evidence of identity. He believed he had seen Mr. Ward and spoken to him in December, discussing why he should visit a surgery three and a half miles from his home. He was firmly convinced that it was William Ward and if not, it must have been someone strikingly like him. He was certain that he had made it an invariable and inviolable rule never to give a certificate without seeing the patient. He well knew the consequences of giving false or misleading certificates. When he gave N.H.I. certificates he used a book with numbered counterfoils, and he always filled in the counterfoils, employing a clerk to make records from them. He had thought he had a fraud-proof system, but since the police-court proceedings had taken steps to tighten it up still further. He could recall nothing about the first three certificates, but had some recollection of the fourth. His written records of Jan. 4th, 1936, showed that he had not seen Mrs. Ward's elder daughter then, for he had only issued an infant's cough mixture. The adult daughter had first been seen on April 17th, 1936, for a rash on the shoulder; she had complained of nervous trouble in September, 1936. He also produced records of attendance by Mrs. Ward with her children of school age. It was not his custom to charge for certificates of inability to work if no treatment was given.

Cross-examined, he said he knew Mrs. and Miss Ward by sight well and had thought he knew Mr. Ward also. He took no steps to confirm the identity of his patients. He was certain that Mrs. Ward had never come to the surgery with her husband.

Witness answered questions by Dr. J. W. Bone, saying that his recollection of his interview with Mr. Ward in December was that he came as a panel patient. He had no record of treatment for the brachial neuritis and bronchitis which had then—according to the certificate—rendered him unfit for work. If the patient asked for a certificate for an employer, it was now his custom, but had not then been, to ask for the panel card or look for the record card, and he might not give any treatment. In reply to Mr. H. L. Eason, he said he kept no records of patients to whom he gave such certificates; there was no evidence whatever that he had ever seen this man.

In reply to the legal assessor, he said he had taken no steps to ensure that the patient really was on his panel. Anyone could walk into his surgery and get a certificate; if they said they were on his panel he believed them. The certificates in question had been made out by him during surgery hours.

In reply to Sir Robert Bolam, he said he had been in panel practice since 1926.

Mr. Macfarlane read testimonials to character and called the Swansea relieving officer, Mr. Leonard Williams, who stated that he had been there since October, 1935. At that time, and ever since, Dr. Shibko had been poor-law medical officer. A N.H.I. certificate was not accepted by him, except pending the production of the proper poor-law certificate. The four certificates relating to Mr. Ward had been handed to him and he had in fact paid out relief on them. Since the police-court proceedings he always demanded the proper certificate. He had a high opinion of Dr. Shibko's carefulness.

In reply to Mr. Harper, he said he would pay two or three hundred people in two hours and he could not give any detailed recollection of other intermediate certificates.

In reply to the legal assessor and members of the Council, he said similar certificates from other doctors had been accepted and paid on without inquiry. He had demanded no other certificate between May and December. The average practice was for applications for relief to be made by the wife. The case had been visited on May 13th although relief had been paid ever since January on a certificate of Dr. Shibko's. His assistant might have paid other, unrecorded, visits; he himself had never called on the Wards. Certificates were not required weekly but only intermittently, as required. Personation would be quite possible and no steps were taken to establish identity. He would accept the word of a wife that the husband was not fit to make application; Mrs. Ward had made such a statement to him.

Mr. Macfarlane and Mr. Harper briefly addressed the Council, and the President announced that the facts had not been found proved to the satisfaction of the Council.

ADULTERY WITHOUT ERASURE

The Case of Bardwell Ebden Tenison Mosse, registered as of 13, King-street, King's Lynn, M.R.C.S. Eng., 1926; L.R.C.P. Lond., 1926, who had been summoned to appear before the Council on the following charge:—

That being a registered medical practitioner: (1) you committed adultery with Ethel Gregory Johnson, a married woman, of which adultery you were found guilty by the decrees of the Probate Divorce and Admiralty Division (Divorce) of the High Court of Justice dated Nov. 2nd, 1936, and made absolute on Dec. 21st, 1936, in the cases of Johnson *v.* Johnson and Mosse and Tenison Mosse *v.* Tenison Mosse, in which you were the co-respondent and respondent respectively; (2) you stood in professional relationship with the said Ethel Gregory Johnson and/or her husband, Philip Henry Hildon Johnson. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect.

Dr. Mosse was accompanied by Mr. Macfarlane, instructed by Messrs. Le Brasseur and Oakley on behalf of the London and Counties Medical Protection Society. Mr. Winterbottom read extracts from the divorce proceedings, in which it had been stated that Mrs. Johnson was a patient of Dr. Mosse's. Professional attendance was admitted. In 1929 there had been six attendances on Mrs. Johnson in November and December and there had been uninterrupted attendance on both Mr. and Mrs. Johnson from then until June, 1935, ending with 26 calls on Mr. Johnson in January, 1935, and on Mrs. Johnson two in January, two in February, four in March, three in April, and one in June. Three later alleged attendances were not admitted by respondent.

Mr. J. A. Parsons, solicitor to the respondent's previous partnership, testified that a monthly book of visits was in the handwriting of Dr. Mosse and found in it entries of visits to Mr. Johnson on August 1st, 1935, and Sept. 4th, 1935. He also identified a daily record ledger and an entry in it on August 29th, 1935, of attendance on Mr. Johnson.

Cross-examined, he said the partnership had been dissolved by transfer from Dr. Mosse to an incoming partner on Sept. 23rd, 1935.

Dr. Mosse testified that there had been no adultery whatever before February, 1936.

Adultery before that date had never been alleged against him. Since leaving King's Lynn in September, 1935, he had not practised medicine but had been selling cars. He had written to the registrar because he was hoping to start practice again and had a partnership in view; he did not wish to enter partnership until an inquiry had been held and the matter settled. He had taken the initiative in the inquiry. He had first met the Johnsons socially when doing a locum for his brother in Norfolk; they had not been patients of his brother. Later he had joined a partnership in King's Lynn and the Johnsons were patients of the partnership and he had attended them. The former Mrs. Johnson was now his wife. He had first married in 1929 and the marriage had not proved successful. He had never committed any kind of misconduct or familiarity during the period when he was practising. He had first realised his feelings in July, 1935, and had forthwith told the lady that he could never attend her or her husband again and that he must see the husband about it. He had immediately put his practice up for sale. Referring to the entries in the daybooks, he said he had not attended Mr. Johnson on those days but had entered the consultations in the book because it had been the custom to copy entries into the book from a piece of paper. The doctor consulted did not necessarily make the entry. Until a few days ago he had not known of the attention received by Mr. Johnson at that time. Mrs. Johnson had needed medical attention in September, 1935, but he had not attended her in any way.

Mrs. Ethel Gregory Mosse, formerly Mrs. Johnson, testified that she had been a patient of the partnership and confirmed Dr. Mosse's account of the relationship. There had been no adultery before February, 1936.

Mr. Macfarlane and Mr. Winterbottom addressed the Council and the President announced that the Council had found the alleged facts proved to their satisfaction but had not adjudged Dr. Mosse to be guilty of infamous conduct in a professional respect.

CONVICTIONS FOR DRUNKENNESS

The Case of William Dale Lawton, registered as of 80, Princess-road, Moss Side, Manchester, L.R.C.P. Edin., 1903; L.R.C.S. Edin., 1903; L.R.F.P.S. Glasg., 1903, who had been summoned to appear before the Council on the following charge:—

That you were convicted of the following misdemeanours—viz.: At the Stockport County Petty Sessions: (1) on August 17th, 1922, of obstructing the highway by leaving a motor-car thereon without lights, and were fined £1; At the Manchester City Police-court: (2) on June 2nd, 1925: (*a*) of being drunk whilst in charge of a motor-car, and were fined £2; (*b*) of driving a motor-car in a manner dangerous to the public, and were fined £20 and licence suspended for six months: (3) on Sept. 5th, 1927, of driving a motor-car in a manner dangerous to the public; and were fined £1 and disqualified for holding a driving licence for two years; (4) on Oct. 12th, 1936, of being drunk, and were fined 5*s.*; (5) on Dec. 15th, 1936, of being drunk, and were fined 10*s*; (6) on Dec. 31st, 1936, of being drunk, and were fined 10*s*. or seven days' imprisonment.

Dr. Lawton was accompanied by Mr. Oswald Hempson, solicitor.

Mr. Winterbottom asked leave to add before charge (2) a further charge based on a conviction before the Manchester City Police-court on Jan. 26th, 1922, for being drunk in charge of a motor-car, with a fine of £2. He added details of the convictions. A Warning Notice had been sent in October, 1925.

Mr. Hempson said that his client was 75 years old and had been in his present practice for 33 years. He could not give an undertaking of total abstinence as that step might be prejudicial to his health, but he was only keeping the practice alive for his son, who was taking his final examinations this summer and for whom he could make no other financial provision. Testimonials were read and the President announced that judgment would be postponed for twelve months subject to the usual proviso.

A CHARGE OF FALSE PRETENCES

The Case of Alfred Edward Vawser, registered as of Redcot, March, Cambs, L.M.S.S.A. Lond., 1928, who had been summoned to appear before the Council on the following charge:—

That you were on April 4th, 1936, after pleading guilty, convicted at the Uxbridge Petty Sessions of having obtained from Messrs. Waddington & Sons by means of false pretences two diamond rings of the value of £52 with intent to defraud, and were sentenced to two months' imprisonment in the second division, and that your appeals on May 19th, 1936, and Oct. 30th, 1936, to the Middlesex Sessions and to the High Court of Justice respectively, were dismissed.

Dr. Vawser was accompanied by Mr. Oswald Hempson, solicitor.

Mr. Winterbottom read newspaper accounts of the proceedings. Respondent had taken two rings on approval and had pawned them for £10 each. He had pleaded guilty, expressed sorrow and offered restitution. While in the R.A.F. in Iraq he had had a severe motor crash which had left him with a tendency to muddle-headedness.

Mr. Hempson pointed out that the appeals had been dismissed on the technical point that respondent had pleaded guilty. Had he been legally advised at the time he would not have made such a plea. From first to last he maintained that all he had pleaded guilty to was pawning rings that were not his property. He had never been charged before, and was liable to muddle-headedness; he had failed to appreciate the subtle legal definition of false pretences. Credit had been given him because he was known and was an officer in the R.A.F.; he had done nothing to induce credit. He had given his own name and address, and had been in uniform. He had wanted to give the rings to his wife, who was very ill, after a miscarriage, but he did not want to take the rings home that night and had nowhere to put them. A pawnbroker's offered safe custody and a rough valuation. Thereafter he was ill for four days, and was worried about his wife and about 150 patients in bed with influenza. He had no lack of money, and could at any time have obtained £500 on a reversion. His confidential reports had been first class. He had now had to resign his commission and had been trying to earn a living as a locum tenens; he had secured excellent testimonials.

The Council did not erase his name.

ERASURE FOR ADULTERY

The Case of Douglas Chetham Pim, D.S.O., registered as of Thornbury, Brecon-road, Abergavenny, Mon., M.B., B.Ch. 1915, M.D. 1920, U.Dubl., who had been summoned to appear before the Council on the following charge:—

That being a registered medical practitioner: (1) you committed adultery with Mrs. Anne Alma Ferguson on various dates during January, 1935, and on subsequent occasions during the year 1935; (2) in August, 1933, the said Mrs. Ferguson consulted you about the health of her son, and during the years 1934–1936 you also stood in professional relationship with the said Mrs. Ferguson and her son and her maidservant. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect.

The complainant was Mrs. Anne Alma Ferguson, who was represented by Mr. J. P. Valetta, counsel, instructed by Messrs. Grover, Humphreys and Boyes, solicitors.

Dr. Pim attended, accompanied by Mr. Macfarlane, instructed by Messrs. Le Brasseur and Oakley on behalf of the London and Counties Medical Protection Society.

Mr. Valetta emphasised the importance of the dates in the case. Intimacy was admitted but professional relationship denied. Complainant said that the first act of adultery had been in January, 1935, and there had been no suggestion of it before. Respondent put it first in July, 1933, and claimed to have known Mrs. Ferguson in childhood. Complainant denied childhood acquaintance, and said she had taken her boy to the doctor in 1933. He had been extremely kind at a time when eminent specialists had given the gravest prognosis. He had flatly contradicted the diagnosis and had secured further opinions.

Mr. Valetta read a letter dated September, 1934, giving a report on the boy's X ray appearances to Dr. Pim, and discussing a régime for the patient. Dr. Pim, he said, had dissuaded the mother from getting a London specialist's opinion, promising to keep an eye on the boy himself. He had done so admirably, and the mother had felt a very great sense of obligation. Dr. Pim had poured into her ears a tale of domestic woe, including statements that his wife was unfaithful and that he was in financial trouble. On Armistice Day, 1934, he had introduced her to his wife for the first time and the ladies had conversed for an hour. Afterwards Dr. Pim had spoken of divorce and re-marriage, saying his wife had suggested it, and suggested also that Mrs. Ferguson should make provision for Mrs. Pim. Thereafter he had laid siege to complainant, saying he had finished with his wife. Then had come a period in which there had been no communication. In 1935 they had stayed together in Torquay for a week, complainant thinking Dr. Pim and Mrs. Pim had parted. Next March she had been served with divorce papers citing her as intervener; this had been a complete surprise. Adultery had been alleged on a number of dates. A few days later the petition was withdrawn. Then Mrs. Ferguson had discovered that Dr. and Mrs. Pim were living together and they had begun bombarding her for money. Scurrilous statements were circulated to the effect that Mrs. Ferguson had broken up the Pim household. In February, 1935, she had required a dental extraction and Dr. Pim had taken her in his car to a dental surgeon—not her usual attendant—and had given the anæsthetic.

Mrs. Ferguson confirmed the story told by her counsel. She had first met respondent on the beach at Greystones in 1933; she had never seen him before in her life and did not know he existed until that morning. He had not made love to her at that time and they had not committed adultery during that summer. On the beach they had discussed the boy's education; respondent had urged her to send the boy to a school where he himself was about to be appointed medical officer. She had visited him there and he had shown her over the school and been very kind, and had suggested holiday arrangements. Later in the year he had told her about a "tremendous row" concerning his wife and his partner and had said he and his wife went their own ways. In June or July, 1934, she had met Dr. Pim again, having moved to Cheltenham in the February, and in August, 1934, she had been very worried about her son and had sent the X ray report and bad prognosis to Dr. Pim and asked for help. Later she had telephoned to ask the best doctor to go to in Cheltenham. The doctor recommended was on holiday and his locum, who attended, was just going, so next day Dr. Pim had himself called, bringing the X ray and report. The boy was in bed and Dr. Pim and another doctor had consulted about him; Dr. Pim had taken the X ray to a local radiologist and got a second reading of it. She had had four doctors already and had asked if Dr. Pim could not look after the boy, who had burst into tears at the suggestion of yet another examination. Dr. Pim had at first refused, as he did not practise in that district, but had at last consented, and had been present at the consultation with the specialist. He had refused a fee but had taken a water colour as a gift. Her brother had pressed her to take a London opinion and Dr. Pim had told her not to. He had given her a tonic for herself, some patent medicine, and she had taken it. She had asked him about a pain and he had asked about an operation she had had and offered to write to the surgeon. Instead, she had returned to Ireland and seen the

surgeon. Dr. Pim had asked her to find shooting for him there. They had travelled over on the same boat. Between August and November, 1934, Dr. Pim had brought in a tonic for the boy but had not attended any other member of the household until the maid got influenza in December. He had performed small operations on her hand and foot. The maid had been on his panel. She had felt very grateful and would have done anything she could for him. After the dental anæsthetic in February, 1935, respondent had not attended at her house. He had offered to but she would not have it.

Cross-examined by Mr. Macfarlane, she said she made the complaint in March, 1937, because of the calumny by his brother in August, 1935. In January, 1936, she had written to Dr. Pim saying that she would go to the General Medical Council if that were necessary to get Dr. and Mrs. Pim to speak the truth. The year's delay was due to her nephew's grave illness. She had not heard in March this year that Dr. Pim was doing rather well in practice now, and had not told two gentlemen in Cheltenham that she was taking proceedings for revenge. She denied that Dr. Pim had recognised her on the beach at Greystones; she had played on the beach there as a child. She had been for walks on the golf links in the evening with Dr. Pim at Greystones, but had not had intercourse with him then. He had not done anything professionally for the son in August, 1933. They had discussed the school and bullying. She had asked nothing of him; he had volunteered everything. He had sent no bill and she had not thought of suggesting payment. She had asked why he took so much trouble and he had said he would get a guinea a term for him if the boy went to the school he recommended. He had never examined the boy with any instrument; being on holiday he had no instruments. The boy had suffered from travel sickness on the journey from Ireland and Dr. Pim had given him a sedative at the hotel. The boy had not disliked him more than any other doctor. At no time had Dr. Pim written and refused to attend the boy. He had written a letter to enable the boy to be removed to the new school—as he was a ward in chancery; it said the boy was not in very good health. She had never tried to see Dr. Pim or rung him up asking for meetings. He had not proposed to discontinue the friendship; no such letter had been written. She had telephoned in June, 1934, and asked him to come, but had never previously rung him up. The consultation about the boy was before she ever consulted him about herself. In March or April she had had a sort of caffeine poisoning and her cousin had rung up a nearby doctor; she had paid the bill. She had had a facial burn about this time and had shown it to Dr. Pim professionally; he had said it was all right. She had written to the Irish doctor and asked for the report he had sent to Dr. Pim; in his reply (produced) the doctor had written that he had no record of a report sent to Dr. Pim and had only seen the boy once and found no clinical signs of disease. Yet she still maintained that this doctor had said the boy might die at any moment. The X ray had been sent to Dr. Pim, not to her. She did not know what "consultation" or "professionally" meant, she used the terms in her own meaning. She had paid the other doctors but not Dr. Pim. She had written also to the doctor who had examined the boy in Cheltenham, with Dr. Pim, and he had replied to her solicitor that on August 30th he had received a message from her and had arranged to meet Dr. Pim at the house as Dr. Pim had the X ray. He had asked Dr. Pim to get in touch with the tuberculosis officer. He recollected Dr. Pim saying he did not want to take on the case as he lived too far away, and did not recall his making an examination. He had never regarded Dr. Pim as the doctor in charge, and had charged for ordinary visits and not for a consultation. He had only understood that Dr. Pim would act for him in getting hold of the tuberculosis officer. She did not agree that she herself or any man friend could have done that. The tuberculosis officer had written to Dr. Pim that he had suggested lines of treatment to her; he had not made the suggestions to Dr. Pim. Dr. Pim had shown her the letter but had not given it to her. On the occasion when she had seen respondent's wife Mrs. Pim had said she wanted a divorce and told all her life-history. She had never mentioned Greystones or adultery. Dr. Pim had had a number of meals with her and had not paid for them. He had given her £20 but that was his mother's money. His mother was almost living on her. His telephone had been switched through to her house,-but the £20 was not the agreed share of the expense. She had not told the dentist that she would only have gas if Dr. Pim gave it, or asked for Dr. Pim. It had been an emergency. (The letter from the dentist stated that Dr. Pim had rung up saying a friend of his had a very bad tooth. He had advised immediate extraction and gas and she had expressed desire to have Dr. Pim.) It was not fair to say he was practically living in the flat at the time. In March, 1934, another doctor had attended her; in April Dr. Pim had gone to practise in Abergavenny where she had written to him. It was not obvious that he was in a very poor state of health and worried to death about the situation. She had gone to live with him in Abergavenny in May. She had lent him a maid, as his wife had left him. Mrs. Pim had not left in consequence of her arrival. Dr. Pim had not cashed cheques for her. Mrs. Pim had begged her to do something to help Dr. Pim. She had left Abergavenny some time before Mrs. Pim returned.

Re-examined, she said she had made every endeavour to obtain witnesses for a slander action against Dr. and Mrs. Pim because of the scurrilous remarks being made, and had been advised that there was no relief to be obtained that way. Rumours were going round both in her Irish home and in Cheltenham. She had appealed to Dr. Pim to stop them in October, 1935.

Mr. Hugh Richard Ferguson, son of the complainant, testified in support of the story told by his mother. Dr. Pim had given him some medicine for travel sickness. After his illness in Ireland Dr. Pim had examined his chest with a stethoscope and asked various questions. He was in the room during the tuberculosis officer's examination. He had promised to keep an eye on witness at school and had seen him on Sundays and asked if he was keeping all right. He had given witness some medicine as an alternative to that ordered by the tuberculosis officer.

In answer to the legal assessor, he said he had only seen Dr. Pim at his mother's flat on Sundays and holidays. Dr. Pim had never visited him.

Cross-examined, he said he had not liked Dr. Pim very much. The first bottle of medicine, he thought, came from the chemists and the second direct from Dr. Pim.

Miss Margaret Frances Cadell said she had known Mrs. Ferguson since childhood and had been at Greystones in August, 1933. She remembered Mrs. Ferguson's visit. She had noticed no signs of intimacy between her and Dr. Pim and had heard

no gossip. She had not known Dr. Pim during childhood.

Cross-examined, she agreed she had said something to Dr. Pim to the effect: "You know that person; she used to be Alma Gamble."

In reply to the legal assessor, she said she had never seen them together before.

Dr. Pim gave evidence denying that of the complainant. He said he had been born in Ireland and had usually spent his childhood holidays at Greystones. He had seen Mrs. Ferguson there in 1933 but had not recognised her until after Mrs. Cadell had spoken to him. Then he had said: "Do you remember me? I'm Douglas Pim." She had replied "Great God; we played here together as children." During the ten days they had been together there she had wept and said how lonely she was as she was being divorced in Australia. He had tried to cheer her and had taken her to a dance; both had had alcohol and on the way home misconduct had occurred. He had never seen the boy except when sunbathing on the sands and had passed casual remarks about his physical state and recommended his own school. The boy had gone to that school in January but respondent had not known of it until June. After the journey from Ireland he had not seen the boy but had said to the mother "Why don't you send him to bed?" He had never heard of the alleged certificate for the Chancery Division until this afternoon and had never written any such letter. In the summer of 1934 he had not been consulted by Mrs. Ferguson but she had frequently rung him up and he had refused to see her. He had given it her in writing that he did not wish the affair to continue. One day in June she had left a message accusing him of getting her over to England and then letting her down. She had complained of loneliness and asked him to tea. She was being attended at that time by Dr. Basil Taylor. She said she had tried to commit suicide because of him; he had repeated what he had said before and walked out of the house. At no time in that year did he advise her as her doctor. She had written again at the time of the alleged tuberculosis (August, 1934) and he had again refused to have anything to do with her professionally, partly—he had said—because of the distance and partly because of the boy's dislike of him. He was not clear whether the X rays had come to him direct or not; he had known the radiologist at college. He had never put a stethoscope on the boy in his life and had not been in the room when the other doctor had examined him. He had gone to the house out of pity and because Mrs. Ferguson had asked him to go and introduce the other doctor, a friend of his. He had got in touch with the tuberculosis officer at the other doctor's suggestion because the latter was going on holiday next day. He had never seen the resulting X ray or a report of it and had handed the tuberculosis officer's letter to the mother. He had himself played no part in treatment. Apart from the dental gas he had never acted as a doctor to Mrs. Ferguson or her son. At the time of the gas he had been having all his meals at her flat; it was about a month after she had been cited in the divorce proceedings. She had refused to have gas unless he gave it. He had paid £20 the first week in January towards the expenses incurred for him in the flat. His wife had joined him at Abergavenny on April 1st and from that time he had had frequent correspondence with complainant. He had been under treatment by the medical superintendent of the mental hospital at Abergavenny as he had been so worried about the state of his mind. She had lent him a maid, who had acted as his maid; he had never treated the girl. He had last seen complainant in October, 1935. In January, 1936, he had received a letter from her which he had handed to his wife, who had torn it up and thrown it in the fire.

Cross-examined, he maintained that complainant had forced herself on him from May, 1933, onwards. He had relented in June, and had regretted it ever since. She had reproached him hysterically over the telephone until he had said "Shut up: I'll come round." The housemaster was his nephew and he saw him frequently; he might have handed the tuberculosis officer's letter to him as a matter of convenience. She had offered him a picture; he had refused it; she had said she would break it if he didn't take it. The petition had been withdrawn partly because he felt he had done the wrong thing in breaking up his home and partly because friends in Ireland told him the type of woman Mrs. Ferguson was.

Mrs. Pim, wife of the respondent, said in answer to examination that her husband had brought Mrs. Ferguson to the house in November, 1934. She had then told Mrs. Ferguson the substance of her husband's confession of adultery and that she would take divorce proceedings. She had filed a petition but had withdrawn it in March, 1935. She had then become reconciled with her husband and had gone to live with him at Abergavenny. Mrs. Ferguson had come to Abergavenny on several occasions.

On cross-examination she said that she had withdrawn her petition because she considered it best for her husband and herself. She had known nothing about the existence of love letters. She had never asked Mrs. Ferguson for money. She had even refused Mrs. Ferguson's offer to pay for the education of her son. She may have told her relations that Mrs. Ferguson had broken up her home. She denied that she had discontinued proceedings because it was hopeless to expect to squeeze any more money out of Mrs. Ferguson.

Counsel then addressed the Council. After deliberation in camera the President announced that the Council had found the charges proved to its satisfaction and directed the Registrar to erase from the Register the name of Douglas Chetham Pim.

Restoration after Removal at Own Request

On Nov. 30th, 1935, the Council acceded to an application by Jean Braun, L.M.S.S.A. Lond., 1915, to have his name removed from the Register. On April 25th, 1937, Dr. Braun wrote to the Council asking that his name should be restored to the Register, and forwarding a statutory declaration and a remittance in accordance with the standing orders which relate to applications for restoration after nonpenal erasure under the Medical Act, 1858, s. 14. The Executive Committee reported to the Council that the standing orders did not expressly provide for the restoration to the Register of a name which had been removed at the practitioner's own request, though in 1921 the Council had been advised that they had an implied discretion to restore such a name and that it was for the Executive Committee to consider the circumstances and advise the Council. In November, 1921, the Council actually restored such a name on the recommendation of the Committee, and the Committee now recommended that the name of Dr. Braun should be restored.

The Committee acceded to this request, but passed at once to consider in camera a report from the Executive Committee which stated that the Committee

had been advised by counsel that the standing orders dealing with the removal of names at the request of the practitioners themselves were ultra vires, for the Medical Acts give the Council no power to make such standing orders. The Committee were satisfied that the Council should recognise that its power to remove names of registered medical practitioners from the Medical Register consists solely of the power of penal erasure given by s. 29 and the power of non-penal removal given by s. 14 of the Act of 1858. The Council agreed with the recommendations of the Executive Committee that the standing orders relating to erasure at the practitioner's request be deleted.

CONSIDERATION OF THE CURRICULUM

Prof. J. B. LEATHES, introducing the report of the Education Committee, said that the committee had now completed a full examination of the Council's regulations for the registration of medical and dental students. It had been instructed to consider the regulations with a view to the removal of discrepancies in practice, and to suggest the modifications which would be necessary to bring the policy of the Council into harmony with its resolutions passed in May, 1936. The committee now, said Prof. Leathes, advised the Council to rescind the regulations and substitute for them the series of recommendations set out in its report. Hitherto the students' register had been compiled from the forms of request for registration which students filled in at the various schools, and had never been complete. Forms were supplied to the schools but only a portion of the whole, sometimes a small one, was returned every year. The method was therefore unsatisfactory. The committee now proposed that deans should send to the Council returns of all persons registered as medical or dental students in order that the Council might be in a position to compile an annual register of the medical and dental students who had commenced their professional studies in each academic year. The Council would be content to rely upon these returns for such information as they might require as to the ages at which students commenced their professional studies, and as to the preliminary examinations in general education and the additional examinations passed by students before admission. It would relinquish the policy by which the authorities of the schools and licensing bodies had been encouraged to make the registration of students by the Council a condition precedent to their admission to the schools.

The committee recommended, therefore, that the present regulations, so far as they related to the method of registration, should be rescinded with effect from Sept. 1st, 1938. So far as the regulations related to the conditions under which students were registered, they should be rescinded from Nov. 1st, 1938. These two dates had been chosen, on the one hand in order that deans entering students in October, 1938, should send in their lists beginning with the academic year 1938–39, and on the other hand that the new conditions of admission relating to age, general education, preliminary examinations and the like, which would be affected by the Council's new resolutions governing professional education, should not come into operation until those resolutions became effective. The committee suggested Nov. 1st as a suitable date. Originally the Council resolved that the new resolutions should come into operation on Jan. 1st, 1938, but in November last they had adopted a recommendation of the committee that the date should be postponed to Oct. 1st, 1938. The committee now recommended postponement for another month in order to give the schools a little more time to come into line with the new changes. It would then be clear that the schools would be at liberty to deal with applications for admission in the first term of the academic year 1938–39 under the 1923 resolutions, and that applications for admission in any later term should be dealt with under the resolutions of May, 1936. The committee therefore recommended that its recommendations, and the resolutions of the Council adopted in May, 1936, should come into operation on Nov. 1st next year.

NEW CONDITIONS OF STUDENT REGISTRATION

The principal changes made in the recommendations to accord with the 1936 resolutions were that before registration as a medical student the applicant must be within three months of attaining eighteen years, and must have passed a recognised preliminary examination in general education, and an additional examination conducted or recognised by one of the licensing bodies. University matriculation remained the minimum standard of general education. A list of examining bodies whose examinations in general education complied with the recommendations was given in the report. The Council should also recognise as complying with these recommendations such examinations of universities in British India, the British Dominions and Colonies, and foreign countries as were accepted by any university of Great Britain, Northern Ireland or the Irish Free State as qualifying for entrance or matriculation.

The subjects and scope of the additional examinations to be required were copied from the Council's 1936 resolutions :—

(1) For all applicants, chemistry (theoretical and practical), the elementary principles of general and physical chemistry and of the chemical combination of elements, including carbon.

(2) For all applicants, physics (theoretical and practical), the elementary mechanics of solids and fluids, the elements of heat, light, sound, electricity and magnetism.

(3) For applicants who have received their instruction in chemistry and physics before entering universities, university colleges, or medical schools, one or two subjects of general education other than chemistry, physics, or biology, at a standard higher than that of the recognised preliminary examination in general education.

The standard of the additional examination in a subject or subjects of general education should be approximately that required in a subsidiary subject offered for the Higher School Certificate at the examinations specified in the recommendations. This phrase indicated the kind of standard the Council had in mind. The School Certificate in England, which could be taken at sixteen or under, might under certain conditions exempt from university matriculation, but provision was made at the schools for an examination at a higher standard—the Higher School Certificate—for boys in later years. This certificate could be obtained by taking either three full subjects, or two full subjects and two others at a somewhat less exacting standard, called subsidiary subjects. This latter standard might well have been in the mind of the Council as a standard for the additional examinations.

This change, which was perhaps the most difficult of all the new changes, had not been proposed without due cause. Since 1923 English schools had been teaching chemistry and physics to boys who intended to take up medicine, and a pernicious tendency had developed of allowing boys to pass their test in general education at sixteen, and sometimes even

before, and then setting them to study nothing but the principal medical subjects for the rest of their time at school. The present suggestion was an effort to combat that tendency and to draw the attention of masters and parents to the necessity of continuing the general education of students after they had passed the comparatively low standard of the School Certificate. Applicants should be able to offer themselves for examination in biology either before or after they were registered as students.

The committee had met in conference all the deans of the London medical schools except three, and they had unanimously agreed that this method could be worked so far as they were concerned.

THE CASE AGAINST DELAY

Sir HENRY BRACKENBURY said that he was not convinced that the postponement of the operation of the new conditions from Oct. 1st to Nov. 1st was either necessary or desirable. In May, 1936, the Council had prescribed the new curriculum, both preliminary and clinical, and all members had regarded it as a considerable improvement. It should not, therefore, be postponed longer than was fair and necessary to those who had already embarked upon some portion of their medical education, either at school or at a medical school. The effective date had already been postponed once in order to give the public and secondary schools from which most medical students were recruited two full school years' notice of the alterations that might be necessary for the guidance of their senior boys and girls in the kind of curriculum they should take while at school or immediately afterwards. This notice had been ample. The only effect of postponing the change from Oct. 1st to Nov. 1st, 1938, would be to enable the authorities of medical schools to train the whole body of medical students who joined in 1938 (for nearly all medical students entered in October) under the old instead of the new curriculum. The recruitment of medical students under the improved conditions would be postponed for a year. The postponement would even embarrass the schools themselves, for they might be conducting two different kinds of curriculum simultaneously, according to whether a student registered in October or November.

Prof. R. J. JOHNSTONE also inquired the reason for the change. His own faculty, he said, had spent a very strenuous winter session preparing for the change, and now would not encounter it for another year. He suggested that the same effect would be produced by a postponement to Jan. 1st, 1939, or even Oct. 1st, 1939.

Prof. LEATHES replied that when the new resolutions came into operation they would, so far as they dealt with clinical years, affect not only students who entered after Nov. 1st but all students. Only the conditions of entry after Nov. 1st would be affected. The committee had been advised that two years was not enough notice and had thought it advisable to give what amounted practically to an additional year.

Sir H. BRACKENBURY asked whether a student who entered in October, 1938, and therefore under the old conditions had not a right to claim registration five years afterwards because he had satisfied the old conditions though not the new.

Sir ROBERT BOLAM suggested that this question must be put to the licensing bodies. Sir Henry was not fully aware of the difficulties that beset the officers of medical schools when a new set of regulations was announced. The faculty at his own school had been bombarded by headmasters and parents with questions whether the pupils who had been under preparation for two or three years could sit in October, 1938, under the old regulations, or whether they must prepare for the new. To upset the whole of the medical curriculum meant years of work for a licensing body in readjusting its arrangements. The postponement meant that medical schools could but need not insist on pupils coming in under the new recommendations. If they gave sufficient notice in their calendar they could alter the succeeding years of the curriculum. He doubted, however, whether the schools had yet got everything ready for the later years. He hoped that the Council would not embarrass the public and the medical schools by bringing the new conditions into force in October and forcing them to deal with many applications for exemption.

Prof. L. P. GAMGEE said that such difficulties were not felt in all schools. His own school was quite ready to adopt the new regulations on Oct. 1st. If the change was postponed for a month it would probably cause trouble in the shape of applications from students who had entered under the old regulations to undergo the whole of the old curriculum. If the extra month were given the Council should recommend that all students who entered during October, 1938, should, for the remainder of their course, go under the new regulations.

Dr. D. J. COFFEY, however, spoke in favour of the extra month. The raising of the age to eighteen had been unexpected and the students who came up from schools after doing chemistry and physics might not have done extra subjects, but would have an opportunity of coming in without them. A student, however, who had passed in chemistry and physics by Nov. 1st under the old system was in an ambiguous position. Under the old regulations he would have had at the end of the year to pass an examination in chemistry, physics, and zoology, but under the new regulations he would begin on his anatomy and physiology at once. Had he to pass the old examination at the end of the first year and the new at the end of the second? He would have to be exempted from the heavy first examination in chemistry and physics required under the existing curriculum. Dr. Coffey also suggested that printed forms should be supplied to each school.

Prof. GAMGEE also opposed the postponement to November, but Sir R. BOLAM pointed out that the contract into which the new student entered with his medical school gave the school liberty at any time on due notice to alter the syllabus and examination subjects. No school could be run on any other lines.

Prof. J. W. BIGGER thought that great confusion would be caused and students would go to the schools which gave them the most generous exemptions. If the notice given to the schools was not enough the correct procedure would be to hold back the new conditions until October, 1939. November, 1938, was either too soon or not soon enough.

After further debate a motion by Sir H. BRACKENBURY to put the date forward until Oct. 1st, 1938, was lost by 20 votes to 6.

REGISTRATION OF DENTAL STUDENTS

The committee advised the Council to require that every dental student (subject to occasional exceptions) should be registered in the same manner and under the same conditions as a medical student, but that applicants for registration might commence their professional studies as pupils of a registered dental practitioner instead of at a recognised dental hospital

or school. Under the regulations at present in force, said Prof. LEATHES, a student who took his dental mechanics in his apprenticeship might deduct half the time from his curriculum. In consultation with dental authorities, including the dental committees of the Council, the Education Committee had decided to recommend that an applicant who, after reaching seventeen, had served two or more years as a bona-fide apprentice in dental mechanics with a registered dental practitioner should, if the licensing body thought fit, be allowed to antedate his registration by not more than six months. A year was too much to allow out of a dental curriculum of four years. A dental student could not do all that was required of him in three, for he had to go to a dental clinic for two years and could not pass his biology, anatomy, and physiology in one only. The change would bring no hardship, as applications for exemption on this ground were very rare.

Many persons would like to see the recognition of outside dental mechanics done away with, but there were always a certain number of deserving men who had earned their living for several years as dental mechanics, done very good work, and also educated themselves and passed their preliminary examinations. They deserved encouragement and made excellent practitioners. The committee had therefore recommended what they considered a fair allowance.

Mr. BISHOP HARMAN urged that dental mechanics should still be allowed one year's exemption from the dental curriculum if they had served two years as apprentices, but although the Council agreed that these students were exceptionally deserving people he could not find a seconder for his amendment to substitute twelve months for the six months recommended by the committee.

PUBLIC HEALTH

Sir GEORGE NEWMAN, chairman of the Public Health Committee, referred, in introducing its report, to the new resolutions and rules submitted by the Committee for diplomas and degrees for public health. Formerly, the rules had provided that candidates should produce evidence of having devoted so many hours to the study of specified subjects, but the new rules laid down that a candidate should produce evidence that he had regularly attended a course lasting not less than a stated number of hours. This change would, said Sir George, be more convenient to the licensing bodies. The earlier provision that candidates must make 24 daily attendances of not less than two hours each at a fever hospital had been deleted as too difficult to work. Candidates would now be required to show that they had attended for three months on the clinical practice of an approved hospital for infectious diseases. Of the twenty licensing bodies who had seen the draft rules, three only had criticised them substantially. The Royal Army Medical Corps found difficulty in Rule 2, which provided that the curriculum could not be taken in less than a year. The Committee had felt that the old rules had to be strengthened to shut out the part-time or somewhat transitory kind of training sometimes contemptuously known as "night school" education.

Dr. H. L. TIDY suggested that this rule might be relaxed for R.A.M.C. candidates. The rules were adopted without dissent.

Indian Medical Diplomas

The Executive Committee reported that in February last they had passed a resolution that holders of diplomas granted by the Punjab University on or after Feb. 25th, 1930, should be entitled to registration in the Colonial List. The Committee passed a similar resolution on May 24th recognising the diplomas of the University of Calcutta granted on or after Oct. 16th, 1936. Sir NORMAN WALKER (President), chairman of the Committee, referred to the work of the recently established Medical Council of India in maintaining the standard of Indian university examinations. The three universities already on the list were, he said, those of Bombay, Madras, and Patna.

The Pharmacopœia

The report of the Pharmacopœia Committee was presented by Prof. DAVID CAMPBELL, its chairman. He said that 43,276 copies of the British Pharmacopœia 1932 had been sold up to date, 1066 of them in the last half year. Of the Addendum 1936 the number of copies sold since its publication at the end of last year had been 5557. The British Pharmacopœia Commission had reported to the Committee that its principal concern had been the scope of the next Pharmacopœia. It had reviewed the monographs of the present work and had made a survey of drugs which had been recently introduced or which were attaining increased use in therapeutics. It had compiled a list of those drugs which through decreased use or doubtful therapeutic value might be regarded as no longer worth inclusion in the Pharmacopœia. The lists of proposed omissions and additions had been sent to the appropriate Government Departments and medical bodies, to the Governments of India and the Dominions, and to various branches of the Colonial Medical Service, with requests for criticisms and suggestions. Information had been interchanged with the United States Pharmacopœia Committee of Revision, which had sent the Commission a report on its plan for the revision of the U.S. Pharmacopœia by means of annual supplements. The Commission proposed to watch the plan with interest.

BRITISH HOSPITALS ASSOCIATION

THE weather collaborated with the Mayor of Torquay (Councillor A. Denys Phillips) and his fellow townsmen in providing a welcome to the members of the British Hospitals Conference for their annual conference last week. Miss M. G. MILNE, matron of Leeds General Infirmary, spoke at the first meeting upon the status and rôle of the nursing profession in the hospital system. Contrary to the generally accepted idea she expressed the opinion that salaries paid to nurses in training were adequate and in some cases excessive in an endeavour to tempt an increased number of candidates. More freedom might be allowed, however, to the trained staff and it might soon be necessary to undertake the additional expense of allowing senior sisters to be non-resident. On the controversial question of the matron's position in respect to the supply of food Miss Milne was content to leave the control to the lady housekeeper with direct access to the house governor, while arranging for close collaboration for which she made a powerful plea among all branches of the staff with the nurses.

Hospital publicity was the subject of a paper read in the afternoon by Mr. C. E. A. BEDWELL, house governor of King's College Hospital. Based upon a resolution passed at the last International Hospital Congress he considered the relationship of hospital publicity to health education propaganda. In particular he urged that the voluntary hospitals should be given a proper place in the campaign now being organised for next autumn under the ægis of the Ministry of Health. Mr. Bedwell directed

attention to the admirable paper by Dr. Homer Wickenden, of the United Hospital Fund of New York, for the forthcoming congress in Paris, published in the current issue of *Nosokomeion* and discussed the relationship of the press to hospital publicity as well as the contribution of broadcasting and the films.

VOLUNTARY HOSPITALS COMMISSION

Lord SANKEY made a great impression upon his audience on the following morning in presenting the report of his commission. He based his argument on the contention that there is a general agreement that the voluntary hospital system cannot go on as it is and that something must be done and that had been the opinion of all the witnesses who came before the commission. There was no proposal whatever in the recommendations of the commission to pool funds, but they had endeavoured to create an organisation by which it might be possible to pool experience. In order to deal with the financial difficulties and to provide a means by which the State could assist with grants in aid the commission proposed the appointment of a committee similar to the University Grants Committee as, said Lord Sankey, "the analogy between the universities and hospitals is almost perfect."

Provost SHEEN, in dealing with some of the details of the report from a medical point of view, strongly urged the substitution of auxiliary hospitals for convalescent homes and the abolition of the "process of canvassing masses of people" on making appointments to the staffs of hospitals.

Sir REGINALD POOLE, another member of the commission, said that he had come to its deliberations with an entirely open mind and was in full agreement with the recommendations. He added a personal expression of his interest by offering to contribute to any fund raised to carry them into operation.

The effect of Lord Sankey's speech upon the audience, in which at the outset there was a somewhat critical atmosphere, was seen in the afternoon when at the annual meeting a resolution was passed, almost without discussion, to appoint a special committee to implement the first three resolutions of the commission—namely, the division of the country into hospital regions, the formation in each region of a voluntary hospitals regional council to correlate hospital work and needs in the region, and the formation of a central council to coördinate the work of the regional councils.

It is announced that the first meeting of the special committee will be on June 9th.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdrs. E. B. Pollard to *Arethusa*, and G. S. Rutherford to *Pembroke* for R.N. Hospl., Gt. Yarmouth.

Surg. Lt. F. Bush transferred to Emergy. List.

Surg. Lt. B. O'Neil to *Ramillies*.

Surg. Lts. transferred to Permanent List: H. J. Bennett, J. W. Caswell, L. G. Yendoll, D. B. Jack, J. G. V. Smith, G. S. Thomas, W. B. Taylor, J. E. Davenport, W. D. Gunn, E. J. Littledale, G. D. Wedd, E. James, and W. A. S. Grant.

Surg. Lt. (D) W. L. Mountain to *Ramillies*.

The following have been appointed Admiralty Surgeons and Agents: Mr. L. A. Hiscock, of Southbourne, Emsworth (Emsworth); Mr. J. R. J. Beddard, of Frome (Frome); and Mr. T. Sharp, of Rothesay, Bute (Rothesay).

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt.-Comdr. D. M. Craig to *Revenge*.

Surg. Lt.-Comdr. (D) G. A. O. White to *Victory* for R.N. Hospl., Haslar.

Surg. Lt. C. M. Lamont to *Caledonia*.

Proby. Surg. Lt. J. Ronald to *Iron Duke*.

ROYAL ARMY MEDICAL CORPS

Lt.-Col. G. H. Dive, D.S.O., having attained the age for retirement, is placed on ret. pay.

Maj. W. E. Tyndall, M.C., to be Lt.-Col.

REGULAR ARMY RESERVE OF OFFICERS

Capt. J. B. Murray (Army Dental Corps), having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY

Lt. B. B. Hosford to be Capt.

ROYAL AIR FORCE

Squadron Leader F. P. Schofield to R.A.F. General Hospital, Palestine and Transjordan, Sarafand.

Flight Lts. R. F. Wynroe to R.A.F. Hospital, Cranwell; J. F. Sandow to No. 1 (Indian Wing) Station Kohat, India; J. L. Walsh to No. 20 (Army Coöperation) Squadron, Peshawar, India; and A. W. Callaghan to R.A.F. Station, Biggin Hill.

Flying Offrs. J. H. L. Newnham, P. A. Wilkinson to special duty list on appointment to short service commissions, and J. H. Preston to R.A.F. Station, Debden.

Short service commissions as Flying Officers for three years on the active list and all to Medical Training Depôt, Halton: C. D. Clements, F. V. Maclaine, J. R. McWhirter, A. Muir, J. P. Brazil, and A. W. St. C. Greig.

Dental Branch.—Non-permanent commissions as Flying Officers for three years on the active list and all to Medical Training Depôt, Halton: A. J. Clegg, F. V. Franks, T.A. Gray, and J. F. M. Sampson.

Flying Offr. H. B. Shay to Special Duty List, on appointment to a non-permanent commission.

INDIAN MEDICAL SERVICE

Indian Medical Department.—Asst. Surgs. (1st Cl.) to be Lts. (Sen. Asst. Surgs.): D. H. J. Nicholas and J. W. C. Lopez.

THE LANCET 100 YEARS AGO

June 3rd, 1837, p. 370.

From a summary of the report for 1836 from the Morgue, Paris.

Causes of suicide which were identified:—

	Male.	Fem.	Total.
Mental alienation	10	12	22
Bad conduct	8	1	9
Disgust of life	6	—	6
Misery	4	1	5
Robbers	4	1	5
Disappointed love	3	1	4
Loss of money	3	1	4
Quarrels and domestic disappointments	1	3	4
Loss at play	3	—	3
Drunkenness	3	—	3
Result of quarrels	3	—	3
Incurable disease	2	1	3
Departure from, or separation of, family	1	1	2
Brain fever	2	—	2
Loss of wife	1	—	1
Embarrassed affairs	1	—	1
Result of remonstrance	1	—	1

From the section on deaths from drowning in the same report:—

Accidents leading to submersion:—

Bathing	13
Drunkenness	8
Boating, or sailing	6
Falling from horses, while drinking	3
Playing on the shore	2
Fishing	2
Leaping near the river	1
Washing feet, saving others, storm blowing individual into water, &c.	4

THE LANCET

LONDON: SATURDAY, JUNE 5, 1937

THE CAPITATION FEE

THE national health insurance system, in the twenty-fifth year of its age, is again faced with the problem of making an equitable adjustment in the capitation fee paid to the practitioners responsible for the medical care of the 18 million insured persons in Great Britain, a number which it is proposed to increase by the addition of approximately 1 million juveniles entering insurable employment between leaving school and reaching the age of 16. As on previous occasions, the Insurance Acts Committee of the British Medical Association, representing the practitioners, and the Government have been unable to reach agreement, and the question has, with the consent of both parties, been referred for determination to an independent court of inquiry. The present inquiry is simplified in that it is not to consider the question ab initio. It starts with the assumption that the capitation fee of 9*s*., awarded by a similar court in 1924, is to be taken as the proper remuneration at that time; and the task of the present court is to ascertain what changes, if any, should be made in the capitation fee to meet the changes that have taken place since 1924 in the conditions under which insurance medical practice is carried on. The court of inquiry began its deliberations on May 26th, and the Ministry of Health and the Insurance Acts Committee have exchanged memoranda of evidence and rejoinders, all of which are reproduced in the supplement to the *British Medical Journal* of May 29th.

The Committee contends that the changes affecting insurance practice since 1924 justify an increase in the capitation fee from 9*s*. to 12*s*. 6*d*., and bases the contention on three main grounds. First, it is pointed out that recently, and especially within the last ten years, there has been a "reorientation of medical thought and a widening of the basis of medical practice," which now seeks not only to remove diseased conditions but to promote positive health. The increased responsibility and skill involved in such preventive work is not fully expressed in the increase in the number of the items of services rendered, but it is of definite value to the community and should be taken into account in assessing the remuneration of insurance practitioners. Moreover, the advance of medical science has increased the complexity of diagnosis and treatment and therefore the amount of time necessarily spent with individual patients. Secondly, the Committee produces evidence of an increase in the average annual number of attendances made to each person on a doctor's list. In 1924 the number was estimated by the Minister at 3·5, and by the Committee at 3·75. Since 1924 the Committee has arranged for the keeping of special records by practitioners in nearly all insurance committee areas, and has thus obtained particulars of over 3000 practices, which, it is contended, show that the average annual number of attendances per person on a doctor's list in the years 1930–36 was 5·02. Thirdly, it is put forward that the ratio of practice expenses to gross receipts, which was taken by the 1924 court to be 25 per cent., is now 33 per cent. The Committee accepts the view of the Ministry that the fall in the cost of living would, other things being equal, justify a reduction of 5*d*. in the capitation fee, and that there has been some decrease in motoring costs —not more, however, than 4·6 per cent., corresponding to a reduction in the capitation fee of ½*d*.—but it is contended that these reductions are far outweighed by the increased costs under other heads and by the increased responsibilities and efforts now required in insurance practice. The Committee emphatically rejects the Ministry's view that the young workers proposed to be brought within the health insurance system will need less medical care than the general body of insured persons.

The most important point at issue between the Ministry and the Committee is the extent of the increase in the work devolving upon insurance practitioners, and especially in the average number of services rendered to each person on a doctor's list. According to the records specially kept at the instance of the Committee the number in 1930–36 was, as already stated, 5·02, but an examination made by the regional medical officers of the insurance medical records kept in 600 practices during 1936 showed that the number in those practices was 3·66; and it was found that while the number of surgery attendances had increased by 10·7 per cent. as compared with the results of a similar examination made in 1924, the number of visits had fallen by 3·8 per cent. To estimate the net effect of these changes, the visits and attendances were weighted in the ratio of 1½ to 1 respectively, the average fee in private practice for a visit being usually about half as much again as the fee for a surgery attendance. The figures were corrected for the omission of records of persons dying during the period under review in each of the years in question; and when the weighting is applied to the figures so corrected the totals become 3·99 in 1924 and 4·12 in 1936, showing a net increase in services rendered of about 3½ per cent.—which would be met by an increase of rather less than 4*d*. in the capitation fee, as against the 3*s*. 3*d*. claimed under this head by the Committee. In considering the contention that scientific advances have made insurance practice more exacting, the Ministry expresses the view that the improved methods have mainly affected specialist practice, and that such methods as have been adopted in general practice, for example the injection of varicose veins, have tended to reduce the total services required. The Ministry gives statistics drawn from insurance medical records and hospital reports which, it is suggested, afford

evidence that "insurance practitioners have been relieved of some of the more onerous part of their work by recent developments of health services." As regards motoring costs, the estimate in the Committee's memorandum assumes the use of a 15-h.p. model, which it is stated, "is perhaps typical of the car most commonly employed in general practice," and a running cost based on petrol consumption at the rate of 20 miles per gallon. The Ministry's figures are based on a car of 9 to 10 h.p. consuming petrol at the rate of 32 miles per gallon.

There is an acute difference of opinion on the question of the work that would devolve upon practitioners by bringing persons under 16 years into insurance on their entering insurable employment. The Committee presses the view that though in providing medical care for these young people a practitioner's duties will be to a considerable extent preventive and advisory—that he will be concerned less with incapacity than with positive instruction in health and in the early detection and treatment of disease—they will be none the less onerous. For such persons the practitioner's services though different in kind will be more rather than less important than those rendered to other members of the insured population. It is urged that the period of "transition from the sheltered years of school life to the early years of wage-earning is very commonly a difficult and trying one, when the friendly supervision of the family doctor is of paramount importance," and that therefore the new responsibilities it is proposed to entrust to insurance practitioners will be specially important, not only from the point of view of the individual patients but from that of the community of which they form part. The Ministry agrees that the period of young adolescence is important for future health, but holds that it does not follow that persons of the age in question require more treatment than older persons, or "that in practice they will demand or receive more treatment"; and from evidence drawn chiefly but perhaps not very appropriately from mortality-rates, incapacitating sickness experience, and insurance medical records, it is submitted that the claims which this new class of insured persons are likely to make on the time and energy of insurance practitioners may reasonably be assessed at about half those made by an equivalent number of older insured persons. The Ministry concludes, however, that there should be one uniform capitation fee for all insured persons, including the juveniles, and that the fee should be 8*s*.

The chief impression left by the study of the four able documents now published is that the court of inquiry has still a good deal of ground to explore. The discrepancies between the estimates made by the Ministry and the Committee respectively of the services to be rendered by insurance practitioners, and of the costs that will be entailed in rendering the services, are so great that further information seems needed of the data on which the estimates were based, and the methods employed in handling these data. In the arguments put forward there appears to be some difference of outlook and emphasis. The Ministry seems to consider the question of remuneration in terms of separate items of service—from a strictly quantitative point of view. The Committee, on the other hand, rightly emphasises the importance of considering also the kind and degree of the responsibility assumed. This is in harmony with the general principle on which the capitation system of payment is based; for in that system the doctor is paid, not—as in the attendance system—for work done but in proportion to the responsibilities he shoulders. The court was instructed to have regard in its inquiry to "other relevant factors" and not the least of these is the attainment of the willing coöperation of insurance practitioners in the greatest of national services.

NOVEL METHOD OF ADMINISTERING HORMONES

IN our issue of April 11th last year experiments were recorded showing that the effectiveness of testosterone could be much increased by augmenting the volume of oily medium used for injection or by adding fatty acid to the solution. The effect was probably due to retardation of absorption and decrease of wastage of the hormones. In an annotation we then drew attention to the parallelism between these experiments and earlier work on increasing the effectiveness of œstrone and œstradiol by subdivision of the total dose or by esterification. Soon afterwards the preparation and biological examination of a long series of aliphatic esters of testosterone led to the selection of the propionate as giving the optimum combination of intensity and duration of action,[1] and it was shown that, on castrate rats, a constant total dose of testosterone was more efficient given as propionate once weekly than given as free hormone twice daily.[2]

More recently further tests have been carried out with the esters of œstrone and œstradiol, both on rats[3] and on the feather response of brown Leghorn capons.[4] By the latter test it can be shown that whereas 1 mg. of free œstradiol in one dose has an effect lasting barely one day, 1 mg. as 3-benzoate has an effect lasting ten days, and 1 mg. as 3-benzoate-17-acetate one lasting fifteen days. It seemed likely that this effect of esterification depended on either alteration of the solubility of the compound, resulting in slower absorption from the site of injection, or prolonged liberation of free hormone from slow hydrolysis of the esters. Some interesting experiments now reported by DEANESLY and PARKES[5] have a bearing on these alternatives. It was found that with androstanediol and *trans*-androstanediol an increase in the volume of oily medium actually decreased the effectiveness. These compounds are relatively insoluble, and the more concentrated solutions

[1] Ruzicka, L., and Wettstein, A. (1936) *Helv. chim. Acta*, **19**, 1141; Miescher, K., Wettstein, and Tschopp, E. (1930) *Biochem. J.* **30**, 1977.
[2] Parkes, A. S. (1936) *Lancet*, **2**, 674.
[3] Miescher, Schulz, C., and Tschopp (1937) *Schweiz. med. Wschr.* **67**, 268.
[4] Parkes (1937) *Biochem. J.* **21**, 579.
[5] Deanesly, R., and Parkes (1937) *Chem. and Ind.* **56**, 447.

readily crystallise out to form a mush of oil and solid matter. It seemed therefore that the greater effectiveness of the concentrated solutions might be due to slow absorption of the crystal mush. This possibility was investigated by administering testosterone to rats and œstrone to capons by the subcutaneous implantation of a solid crystal or compressed pellet. The results were remarkable. A single implantation of a 2 mg. crystal of free œstrone feminised the growing plumage of capons for 2–3 months, four times as long as a similar amount of the most effective ester. A single implantation of a 2 mg. pellet of free testosterone to castrate rats caused greater development of the accessory glands at the end of ten days than the daily injection of a corresponding amount of the propionate in oil.

In view of the increased response in such experiments where absorption of the free hormone was inevitably slow, converse experiments were carried out; the esters were administered in such a way that absorption into the circulation was inevitably rapid (intraperitoneal injection) or instantaneous (intravenous injection). Given in this way, neither œstradiol benzoate nor testosterone propionate showed any prolongation of action, indicating that hydrolysis is rapid once the compound gets into the circulation. Hence it is concluded that the alteration of hormone effectiveness by esterification depends on a change in the solubility of the compound in body fluids and consequent alteration in the speed of absorption from the injection site. DEANESLY and PARKES also point out that since the method of administration has such a profound influence on the effectiveness of a compound, and since the optimal conditions differ for different compounds, a valid quantitative comparison of two substances can only be carried out after a thorough study of the conditions necessary for maximum efficiency.

A NEW USE FOR ETHYLENE

ENCEPHALOGRAPHY, a valuable method of investigation which is often employed in neurosurgical clinics, has the one great drawback of producing intense headache, vomiting, and malaise in nearly all of those subjected to it. Headache may disable the patient for several days; the other disturbances usually subside after a few hours. Any method which would give equivalent radiological results, but without these unpleasant though not dangerous accompaniments, would clearly be welcomed. It has been assumed by some surgeons that the air itself has an irritating effect upon the brain and meninges. Others suggest that a more readily absorbable gas would cause less discomfort; oxygen, carbon dioxide, nitrous oxide, and helium have all been used as substitutes for air, but there has been no unanimity of opinion that they are any better and air is still used in most clinics.

Dr. HENRY NEWMAN[1] of California has used ethylene for encephalography in thirty cases. In water at 20° C. this gas is about seven times as soluble as air. Nitrous oxide—possessing a solubility nearly forty times that of air—was used in a few cases, but the gas was absorbed so quickly that the radiograms were unsatisfactory. The pictures obtained when ethylene was used showed good definition, provided that the exposures were made within fifteen minutes of the insufflation. The gas disappeared much more rapidly from the subarachnoid space than from the ventricles. Dr. NEWMAN thinks that the headache experienced during the injection was not less severe than when air was used, but that it lasted a much shorter time. Patients were usually quite comfortable within three or four hours, and were able to get up the following day. The average stay in hospital following air injection was three days; the use of ethylene reduced the average to 1·85 days. The author does not believe that the anæsthetic property of ethylene has any significance, but that its free solubility and consequent more rapid absorption is the reason for its usefulness in these cases.

The removal of cerebro-spinal fluid and its replacement by a gas must profoundly affect the dynamics of the intracranial structures. Indeed, it is surprising that in the absence of a space-occupying lesion or abnormally fragile blood-vessel, the central nervous system can sustain such an insult without apparent damage. The withdrawal of the cerebro-spinal fluid which affords support to the meninges and arteries by reason of its density and pressure, and its replacement by a medium of such vastly different density, even under a considerable pressure, can hardly take place without gross alteration in the tension of the various intracranial structures. This effect will be most pronounced upon the relatively unprotected vessels coursing over the pia in the subarachnoid space, and is probably responsible for the immediate severe headache and shock-like reaction. A pleocytosis of the cerebro-spinal fluid subsequently develops, and the pressure may remain unduly low, or rise above the normal. Various pieces of apparatus have been devised in order that the displacement of the fluid by gas may be gradual and may lead to a minimum of disturbance of the intracranial structures. It is probable, however, that whatever method be adopted, there will of necessity be a "basal" degree of headache, which will be noticeably severe if the method involves sudden, violent fluctuations in the intracranial pressure. This immediate reaction will clearly be unaffected by the nature of the gas employed. The prolongation of the disturbance for two or three days is to be related to the meningeal reaction; it is possible that if the gas be rapidly absorbed from the subarachnoid spaces, the pia-arachnoid reaction may resolve more quickly. This was certainly the clinical observation in Dr. NEWMAN'S cases.

[1] *J. Amer. med. Ass.* 1937, **108**, 461.

Dr. Robert Hutchison has accepted an invitation to serve on the committee to review the use of corporal punishment in the penal system of Great Britain. The constitution of the committee is given in our Parliamentary column.

ANNOTATIONS

PROGRESS IN THE HYGIENE OF INDUSTRY

LAST week the committee stage of the Factories Bill was completed in the House of Commons under the able guidance of Major G. Lloyd George and the Bill was ordered to be reported to the House. It may be well to take stock of the present position and to inquire in what respects the Bill has been amended from the point of view of industrial health during such exhaustive discussion. They may be briefly summarised thus.

The Adolescent.—Young persons between 14–16 years are not to work more than 42 or 44 hours a week. That is a welcome move in the right direction. We have ourselves consistently advocated a 40-hour week for young persons of these ages. The public-weal demands that adolescent men should be both encouraged and enabled to live a full and healthy life during the second physiological period of rapid growth, and we have recently indicated the support given to this demand from many sources.[1] Welcome also is the withdrawal of the clause permitting boys of 14–16 to be employed in certain trades for 56 hours a week between 6 A.M. and 10 P.M. The Home Secretary is to be given power to forbid overtime for young persons up to 18 where "detriment to health" can be shown and also to reduce overtime for women and young persons if it be proved that that overtime is "unnecessary" in a particular industry. The practical value of these concessions is lessened by the well-known difficulty of proving detriment to health or the presence of necessity. Only a strong executive could get good value out of these and other vague clauses in the Bill. The number of weeks in the year during which a woman may work overtime is reduced from 30 to 25, and here again the Secretary of State is empowered, under certain circumstances, further to reduce the hours of work.

General Hygiene and Safety.—Washing facilities and accommodation for outdoor clothing are now to be provided in all factories; we must recall how wide is the new definition of a factory to realise the extent of this advance. The safety clauses in the Bill were so well drawn at the outset that little alteration has been required; it is good that all old hoists and lifts must be fitted with automatic locking gates.

It is still, however, too early to measure accurately the extent of the improvements in industrial hygiene which the Bill will ultimately contain; a number of amendments were withdrawn in committee upon the understanding that the Home Secretary would reconsider them and, if possible, reintroduce them during the report stage. Some provision has been made for the re-examination of young persons but it is too early also to be sure whether certain important amendments which appeared to be very desirable on medical grounds and which were not incorporated in the Bill have been irrevocably lost—e.g., the setting up of a standard of available floor space in workrooms in order that overcrowding may be avoided. Standards of air-space are laid down, in the estimation of which only 14 feet of the height of any workroom may be taken into account. Experience suggests that under certain circumstances the available floor space per person is the more important consideration. In corners of a workroom in which a conveyor-belt is working there may be gross overcrowding, which may result in severe epidemics of influenza or sore-throat, while the air-space of the room is well above the specified standard.

There remains one vital point in the Bill to which constructive criticism, both medical and lay, ought to be directed—viz., to provide effective means to assist the Secretary of State and the Home Office inspectorate in the discharge of the onerous responsibilities which are laid upon them. The Bill, as it is now drawn and amended, is capable of being made a charter of industrial health. Or it may leave things much as they are. Sound and progressive advance in industrial hygiene will depend more than anything on the creation of a strong, representative, and lively advisory council to the Minister. It may be more important now to make sure that the Minister's powers to make special regulations and orders are neither abused nor allowed to remain unused, than it is to obtain an alteration in specific clauses in the Bill. Many of the orders issued under the authority of the Act of 1901, open as they may be to criticism, have been potent instruments for health in so far as they were the expression of medical needs and of practical possibilities as they existed within the several industries.

[1] *Lancet*, Feb. 20th, 1937, p. 451.

THE OLD FARMER AND THE RABBIT

THE practice of dentistry is protected by law far more effectively than is that of general medicine. Under the Dentists Act 1921 no person whose name does not appear on the Dentists' Register may practice dentistry or hold himself out either directly or by implication as practising or as being prepared to practice dentistry; and the penalties for contravention of the Act are severe. Nevertheless it is not easy for the Dental Board to obtain specific evidence of practice by an unregistered person which is likely to secure conviction in a court of law. In his address at the opening of the thirty-second session of the Board, Sir Francis Acland mentioned one instance in which the difficulties had been surmounted. A person whose name had been penally erased from the register had opened a business described as a dental repair company and had advertised it repeatedly in the local press. The advertisements included a variety of ingenious phrases designed to convey to the uninitiated that the advertiser was a registered dental practitioner, and as such was entitled to practise. In testimony to the ingenuity of these phrases Sir Francis regarded it as inexpedient to recite them, but the Board obtained a conviction on charges of holding out and of practising, penalties amounting to £61 being inflicted. Five months later when further evidence of practice became available the same person was again convicted and was fined £25 with costs. This was a case in which the Board had been pressed for some time by a professional organisation to take action but had waited patiently for evidence sufficient to justify prosecution. Sir Francis added: "In this connexion I am reminded of a story of an old farmer in my county who was wont after finishing milking to go up to a field on the farm where, looking over the bank, he could see a large rabbit quietly feeding outside its hole, and after taking careful aim at it to miss it. And on turning away sorrowfully he would console himself by saying 'That ther rabbutt 'll come out of that there hole wance tu often.' One may hope that his perseverance was ultimately rewarded, but his practice is not one which I can recommend to the Board for their imitation. It is better in most cases that we should

not shoot unless our armament is so powerful that missing is extremely unlikely. I find, too, that most rabbits will come within extremely short range if given a little time."

CHEMOTHERAPY OF STREPTOCOCCAL INFECTIONS

THE consequences of the discovery of Prontosil are increasing rapidly in complexity. When it was shown that this drug acts by liberating in the body a substance (*p*-aminobenzenesulphonamide) now known as sulphanilamide, and that sulphanilamide itself could be administered with equally good effect, much that had been obscure became plain; and when the authors of this secondary discovery reported [1] they had synthesised over a hundred similar compounds without finding any of equal therapeutic efficiency, it seemed as if the first shot had struck the bull's-eye and nothing further remained to be done in this direction. Nevertheless sulphanilamide has at least one rival, known under the name of Proseptasine, a report on which by Dr. B. A. Peters and Dr. R. V. Havard appeared in our last issue. Their experience with it in the treatment of erysipelas has been favourable, and this is in accordance with many previous reports on prontosil itself, to which another is added by Dr. G. E. Breen and Dr. J. Taylor on p. 1334. Meanwhile Dr. G. A. H. Buttle and his colleagues at the Wellcome Laboratories, who have previously widened the scope of this inquiry enormously by showing that sulphanilamide has a remarkable effect on a variety of experimental infections other than those produced by *Streptococcus pyogenes*, now enter the field with two freshly synthesised compounds, diaminosulphone and dinitrosulphone, the calculated therapeutic value of which is even greater than that of sulphanilamide, this being deduced from a comparison of their bactericidal activity in vivo and their toxicity. Study of the details in Dr. Buttle's paper (p. 1331) will show that the question of toxicity is by no means simple, since this appears to vary distinctly in different animal species. Another important difference is that the action of diaminosulphone, at least in the blood of a monkey, is strikingly persistent.

There is no knowing where these investigations may lead, either in the direction of improving the present treatment of streptococcal infections, or of broadening the scope of the treatment to include other bacterial infections altogether. It is now quite clear that sulphanilamide is one of a number of chemically related substances able to destroy certain bacteria in the blood and tissues, even when present in very small concentration, provided that the numbers of bacteria to be accounted for are also reasonably small. This is beyond dispute, but its significance is by no means generally understood. A disgruntled writer to a transatlantic contemporary [2] regards the American equivalent of prontosil as a manufacturers' "stunt," and observes: "I do not see how this remedy gained such quick recognition, but it goes to show that doctors are just as gullible to exploitation of cures as the laity. In the future I shall consign all ultrascientific literature to the waste basket." This letter is succeeded by one recounting the unsatisfactory results of administering the drug in a case of bacterial endocarditis due to *Streptococcus viridans*—a condition long known not to be susceptible to the treatment. Between the incredulous and the over-enthusiastic this treatment will have a stormy passage before it finds its true level and is properly understood and applied. At the present time it is being overdone in this country by indiscriminate application regardless of the nature of the infection and by unnecessary prophylactic use in obstetrics. Except as an experiment, or perhaps as a forlorn hope, it should be reserved for infections known to be due to hæmolytic streptococci or meningococci: the dosage should be adequate and the effects carefully observed. Only so can clinical data, which at present lag far behind our experimental knowledge, be usefully amplified.

[1] Tréfouël, J. and Mme., Nitti, F., and Bovet, D. (1937) *Ann. Inst. Pasteur*, **58**, 30.
[2] *New Engl. J. Med.* April 22nd, 1937, p. 711.

A DETAILED ANALYSIS OF ROAD ACCIDENTS

THOSE chapters devoted to road accidents in the book by Dr. H. M. Vernon, reviewed on another page, are of especial interest in relation to the recent survey by the Commissioner of Police for the London area.[1] The points analysed include fatalities among different classes of persons, the accidents in relation to various classes of vehicles, and the hourly and weekly incidence of accidents. It is shown that fatal road accidents increased by 164 per cent. between 1920 and 1930, and those in which motor vehicles were involved by 198 per cent. over the same period. The number of motor vehicles licensed increased by 160 per cent. Some evidence is adduced to show that the application of the Road Traffic Act of 1930 is helping to restrain this terrible accident rate, and the evidence is overpowering that speed is the predominating cause of these accidents. The conclusion reached by the Commissioner for the Police that pedestrians are at fault in about 80 per cent. of cases of motor accidents, the innocent motorist being responsible only for about 7·7 per cent., is difficult to credit. After all the increase in the number of road accidents has kept step with the increase in the number of motor vehicles on the roads and not with an increase in the number of pedestrians. Mr. A. P. Herbert is not the only one who thinks it hardly fair to blame the poor pedestrian for not crawling about in the long grass at the side of the road while large numbers of potentially lethal projectiles are being shot up and down the fairway. One might with as much justification blame the soldiers during the last war for the number of casualties which occurred from flying pieces of metal. An analysis of the number of road traffic accidents shows that pedestrians suffer 63 per cent. of the total fatalities which occur in built-up areas and 29 per cent.—Dr. Vernon says *only* 29 per cent.—in unbuilt areas. Motor cyclists, on the other hand, were killed more frequently in the unbuilt than the built-up areas (28 per cent. and 12 per cent. respectively of the total fatalities), whereas passengers, both pillion and non-pillion, and the drivers of motor-cars and lorries, also appear to be killed more often in the unbuilt than the built-up areas. A graph (p. 106) shows that the drivers of private cars are rarely killed in road accidents.

Railway accidents are responsible for about 350 fatalities a year as compared with 7000 from road traffic. Dr. Vernon attributes the difference to the two factors of education and compulsion. Another explanation may be that railway trains are not allowed to share roads with pedestrians. The railways have, however, adopted many forms of mechanical preventive methods, with the object of "preventing the potential victim from incurring an accident by his own action," and this appears to be the keynote of all rational safety methods of

[1] See *Lancet*, May 29th, 1937, p. 1290.

protecting the general public from accidents. It is, or should be, the ideal aimed at in the prevention of accidents in factories and mines, a matter to which Dr. Vernon devotes close and reasoned attention.

HOMEWORK

EARLY last year, after a parliamentary debate on the harm done by homework to the health of school-children,[1] the President of the Board of Education said that the Government were determined to see that whatever was wrong was remedied and that the Board was actually in the middle of "a comprehensive inquiry into the whole question." The results of this inquiry have now been published[2] and throw light on the merits and demerits of homework as it affects three classes of schools—elementary, secondary, and junior technical. The only weakness of the report lies in the fact that the investigators did not include a medical man, so that the physiological and neurological aspects are not as fully considered as they might have been. From the evidence provided it is clear that the problem of homework is not one problem but many, for it differs in different localities and in different schools. The opinions of teachers and parents are correspondingly heterogeneous, but it is perhaps significant that teachers who are also parents are less convinced than most of their colleagues that homework, as at present understood, is a desirable institution. Parents replying to questionnaires were almost equally divided on whether homework has any adverse effect on health, with a small majority in the negative; but when the homework had been reduced a great majority testified to the benefit of the change. Consciously or unconsciously, the parent is often swayed by social or financial considerations, and the greatest incentive to strenuous homework is undoubtedly the desire of teachers, parents, and the children themselves for success in examinations; indeed in one area parents pay teachers to coach pupils out of school hours, while others ask for extra work to be provided. This practice is at its worst in junior schools in preparation for special-place and scholarship examinations, and could be checked if it were known that examinations in school subjects have been replaced by the use of intelligence tests for which coaching is futile. But hope of examination success is not the only factor influencing parental wishes and opinions. In one home it may be much easier to provide for undisturbed evening study than in another; one parent may wish the child to have much free time for activities beneficial to himself or to the household, while another may prefer the child to have "something to occupy his mind" or to "keep him out of mischief." One of the few medical opinions quoted in the report is that of an assistant school medical officer, that "during April and May there is every year a marked rise in the number of cases of nervous and physical disorders brought to his notice"—a rise which he attributes to anxiety over the examinations. The investigators' own conclusion is that no homework should be set to children under 12 years of age. In the secondary and junior technical schools the trouble, where it exists, is thought to be due primarily to defects of organisation and arrangement, and for these older pupils some reservations are made; but in general it is thought that preparation—i.e., homework or its alternatives—should not be done on more than five nights a week and preferably on four only, and that the hours per night should be limited to one for those under 14 and to one and a half for those above that age.

The absence of medical experience is again almost the only fault to find in a book[3] which describes inquiries at the City School, Lincoln, and contains a striking chapter on the good effects of substituting preparation at school for the ordinary work done at home. The medical aspect becomes especially obvious when one thinks of the needs of individual children suffering from myopia or some other disability likely to be increased by too strenuous a pursuit of higher education.

SURGERY OF ADHERENT PERICARDIUM

IT is more than thirty years since Delorme first proposed the separation of an adherent pericardium from the heart by open operation, and almost as long since Rehn and also Sauerbruch first successfully excised the pericardium; but it was not until the comprehensive paper of Volhard and Schmieden[4] that operative indications and methods were clearly defined. Paul White,[5] in his St. Cyres lecture of 1935, also gave a full clinical account and described, among others, ten cases of resection by E. D. Churchill, of which six were completely cured and one benefited considerably. Mr. Pilcher's excellent result described on p. 1323 should stimulate the more frequent diagnosis of a syndrome which, though admittedly rare, must still claim victims in this country as well as in America and on the Continent. A patient showing chronic congestive heart failure with ascites and swelling of the legs, and with a heart that is radiologically smaller than normal or at the most not grossly enlarged, probably has constrictive pericarditis; if there is also a constant increase of the venous pressure in both upper and lower extremities the diagnosis may be made with confidence. In the early stages the process may be arrested and natural compensation may be effected, but too long a delay before operation may present the surgeon with an insoluble problem, for the pericardium may be so adherent that separation is quite impossible. Johnson[6] has recently written on the use of kymography—which demonstrates the mode of contraction of the heart—in the early diagnosis of the syndrome, and this method of investigation would have the additional advantage of distinguishing between intrapericardial obstruction of the cava and that due to some process beneath the diaphragm. Cranfield and his associates have reported[7] an interesting autopsy in which the condition was associated with tuberculosis of the lungs. Although they could find no active tuberculous foci in the pericardial scar it may be mentioned that the onset of a generalised tuberculosis has sometimes spoilt the good immediate results of separation.

The risks of operation must not be minimised, but some of the important dangers can now be avoided as a result of Schmieden's work. When it is remembered that he could show patients leading active lives six years and four years after pericardectomy,

[1] See *Lancet*, 1936, **1**, 454.

[2] Homework. Board of Education Educational Pamphlets No. 110. London: H.M. Stationery Office. 1937. Pp. 72. 1*s*. 3*d*.

[3] Experiments in Homework and Physical Education. By A. Sutcliffe, M.A., B.Sc., Head Master, the City School, Lincoln; and J. W. Canham, M.A., Science Master at the School. London: John Murray. 1937. Pp. 194. 4*s*. 6*d*.

[4] Volhard, P., and Schmieden, V. (1923) *Klin. Wschr.* **2**, 5.

[5] White, P. D. (1935) *Lancet*, **2**, 539, 597.

[6] Johnson, S. E. (1935) *Surg. Gynec. Obstet.* **61**, 169.

[7] Cranfield, H. V., Gwyn, N. B., Anglin, G. C., and Norwich, A. C., *Canad. med. Ass. J.* 1937, May, p. 449.

it is hard to justify the denial of surgical relief to a patient otherwise condemned to a distressing period of invalidism and to an early death.

OCCUPATIONAL THERAPY

THE value of occupational therapy in fostering self-confidence and desire for renewed health in patients with nervous as well as mental diseases was emphasised by Dr. Wilfred Harris on May 26th at a sherry party at Chester-terrace organised by the Ladies' Guild of the Hospital for Epilepsy and Paralysis, Maida Vale (in future to be called the St. Marylebone Hospital for Nervous Diseases). Lack of occupation, he said, tends to aggravate such conditions as depression or insomnia, and the functions of weak muscles and mental process are still further impaired by disuse. The provision of occupational methods of treatment enables the limbs and the mind to be exercised without the patients realising that they are doing work or being set a task. These methods have been developed and systematised since the war in many large mental hospitals, at some of which more than 90 per cent. of the patients are constantly employed in various handicrafts such as weaving, mat or rug making; knitting, sewing, and embroidery; bookbinding; making paper flowers and bags and Cellophane or string belts; and wood-carving, basketry, and raffia work; apart from kitchen and laundry work and the outdoor occupation in the gardens and farms. It is found at these hospitals that noisy, troublesome, and destructive patients become quiet, social, and productive, while much less hypnotic and other sedative drugs are required. Dr. Harris said that occupational treatment is also being used at certain general hospitals. An Association of Occupational Therapists is now being formed in England on the lines of those organised in America, Canada, and Scotland; schools are being started, such as the Dorset House School at Clifton, and one which Miss Tarrant, who demonstrated the work taught after Dr. Harris's address, and Miss Rivett have opened in London. The educated women trained at such schools are later employed to supervise the patients at their work, to teach them and the nurses the various handicrafts, and to select occupations suitable for types of patient requiring sedative or stimulant work, or exercises for certain muscles. Coöperation between the medical staff and the nurses with the occupational therapist is, of course, essential, and she should be supplied with details of the patients' ailments and their special needs. Games for small classes with the medicine ball, and rhythmical physical exercises done to music are of value to patients able to walk about. The St. Marylebone Hospital for Nervous Diseases is, according to Dr. Harris, one of the first hospitals in England other than mental hospitals to adopt this form of treatment, and although initial expenses have to be met, it is hoped that once started the treatment will more or less pay its way.

SUPPLY OF BLOOD TO THE WOUNDED

BLOOD transfusion services—now a necessity in hospital—reach their greatest importance in war, which, as Sokolowski puts it, represents a "traumatic epidemic." The steps taken by doctors in Spain to cope with such an epidemic are described in a contribution by one of them to an international medical journal published in Prague.[1] Remarking somewhat bitterly that for countries that can enter on war when they wish to do so the adaptation of services is comparatively simple, the author points out that the plan now generally favoured is to ascertain the blood group of every soldier, and when he is wounded provide him with blood either from the slightly wounded or from groups of voluntary donors who can be brought up to the front line when required. The use of cadaver blood would be very awkward on active service because it has to be collected within six hours of death and dealt with in a way that may present difficulties at the front. In Barcelona, before the civil war, there were a few hospitals with excellent transfusion facilities, while others had none of their own. Faced with a war which was unforeseen, without any pre-existing army, and with no regular organisation, the doctors found it impossible to test the blood groups of all the combatants, though much is done by the goodwill and keenness of surgeons at advanced posts. Instead of looking for donors at or near the front, the medical authorities now send up blood from Barcelona, obtained from carefully selected volunteers (mostly young women) whose help is invited by radio. A special correspondent of the *Manchester Guardian* on May 7th described how the blood is collected in sealed glass ampoules, containing up to 300 c.cm. under a pressure of two atmospheres. The tip of the ampoule enters a rubber tube, and at the other end of this tube (which contains a filter, a tap, and a glass section so that the flow of blood can be observed) is an injection needle sealed in glass. The blood in the ampoules is gradually cooled to 0° C., and they are kept in refrigerators at 1°–2° C. till required. The temperature is then slowly raised to blood heat, the tip of the ampoule is broken inside the tube, and the needle is unsealed and inserted into a vein in the usual way. In Aragon transfusion is seldom done in the front-line posts, but usually at the casualty clearing stations, and apparently it is also done, if need be, on the latest motor-car and railway ambulances. The daily supply of blood in ampoules from Barcelona, which has been organised by Dr. F. Duran, is stated as 42 litres; it goes to the front in cars fitted with refrigerators and keeps for a fortnight. On the central and southern fronts, according to the *Manchester Guardian*, the service is different in that the blood is not supplied under pressure but has to be pumped into a vein in the ordinary way. But here, as in Catalonia and Aragon, blood is if possible sent up to the military hospitals from donors at the base. Elsewhere it has been necessary to look for suitable donors in towns and villages close to the lines.

[1] *Internationales Ärztliches Bulletin*, May–June, 1937, p. 43.

BASSINI AND HIS OPERATION

FIFTY years ago Edoardo Bassini revolutionised the treatment of hernia by inventing an operation which reconstructed the anatomical relations of the inguinal canal.[1] The principles of his method were at once accepted, and so much a matter of commonplace have they become that it is hard for surgeons to believe that less than fifty years ago operation for hernia was all but a complete failure. This fact is indeed a little astonishing, for although reconstruction of the posterior wall of the inguinal canal was not done before Bassini did it, ligature and excision of the sac was a recognised procedure; and in young adults with good abdominal muscles complete removal of the sac should have sufficed to give a proportion of permanent cures. The

[1] A paper on the rôle of Bassini in the development of inguinal surgery, by Drs. L. M. Zimmerman and R. E. Heller, appears in *Surgery, Gynecology and Obstetrics* for May, 1937.

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As mentioned in our last issue, the University of Padua is celebrating the fiftieth anniversary of Bassini's operation by publishing two volumes of "Writings on the Surgery of Hernia" which will include Bassini's original papers. Bassini was appointed to the chair of surgical pathology at Padua in 1882, and was made professor of clinical surgery in 1888, so that the University of Padua can claim much of the glory. But perhaps other countries have some say in Bassini's success, for he studied abroad in Vienna under Billroth, in Berlin under Langenbeck, and in London under Lister and Spencer Wells, being one of the first surgeons to introduce antiseptic surgery to Italy. British surgeons have been invited to the special meeting of the Italian Surgical Society on next Sunday in Padua at which problems of hernia surgery will be discussed.

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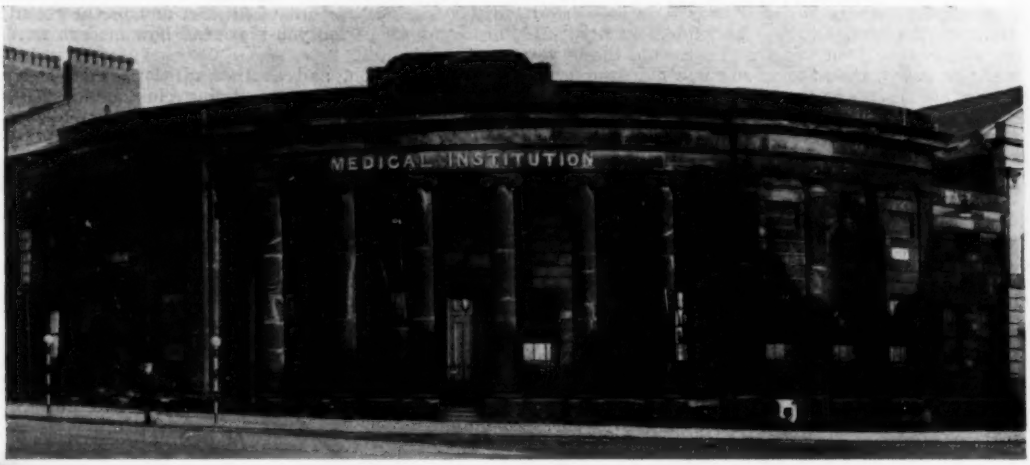

SURGERY 100 YEARS AGO*

R. E. KELLY, C.B., M.D., F.R.C.S.

OF SURGERY IN THE UNIVERSITY OF LIVERPOOL
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however, I come to the purely surgical 1837, it will be well to recall the unrecorded ound against which the surgeon of the time ied on his work, and to remind you of the subjects his thought, his conversation, and his interests.

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Standing on St. James's Mount with a rich shipowner, he would have gazed through a forest of masts at the busy scene of the Sloyne, crowded with shipping, and watched the majestic sweep of the latest arrival at its anchorage. The talk would be of freights, cotton, the abolition of slavery, the Reform Act, and the new railway. Then descending the hill to the narrow, crooked, and noisome slums to attend a fever case in a cellar dwelling, he would hear of reduced wages, the difficulty of rearing children, and the high cost of clothes, fuel, and light.

Illuminating gas had only recently emerged from its primeval chaos to a municipal usefulness, and was used solely for street lighting; street lighting was, indeed, necessary, as, even in towns, one-fifth of the streets were never cleaned, drained, or even paved. Plumbing, though Harrington had invented it centuries before, was not extensive. Even if our surgeon had lived in one of the Georgian mansions fringing Everton Hill—the elegant district—he would have inhabited a house devoid of a bathroom. Envelopes and cigarettes were among the uninvented necessities of life, and in the list of the newer luxuries which had been the ruin of the country, Peacock had to fall back on blameless tea, late dinners, and the French Revolution.

* * *

A good idea of surgery is given by the masterly lectures of the famous Astley Cooper published in the twenties. Inflammation, hæmorrhage, and ulceration occupy a disproportionate amount of space. Bleeding was still popular, especially in head injuries. There is a record of one patient who recovered after 130 oz. of blood were removed in the space of 11 days. Aneurysms must have been exceedingly common. Astley Cooper probably tied most arteries in the body, and on one occasion actually tied the abdominal aorta, though without success. He had seen seven separate aneurysms in one man. Although he dealt with hundreds of aneurysms in men, he records only 8 cases in women. He was aware of the dangers of secondary hæmorrhage when the usual long ligatures came away, and on one occasion he actually used a catgut ligature and cut the ends short. It was for a popliteal aneurysm and the artery was the femoral. No suppuration followed. He tried the same method several times subsequently but was never again able to prevent suppuration. What a tremendous observation this was!—and how near to a great discovery! The world had to wait for 40 years before the genius of Lister unravelled these conflicting results.

* * *

Astley Cooper's chapter on hernia shows that the only important operation for its relief was the operation for strangulation. Before any operation was advised the unfortunate patient was given a tobacco enema to relax the parts. He was then strung up inverted on the back of a porter, back to back, with the calves resting on the porter's shoulders. Cold water was then freely soused over him. If,

* From a presidential address to the Liverpool Medical Institution on May 31st, on the occasion of its centenary. The full text appears in the *Liverpool Medico-Chirurgical Journal* (1937, **45**, 5).

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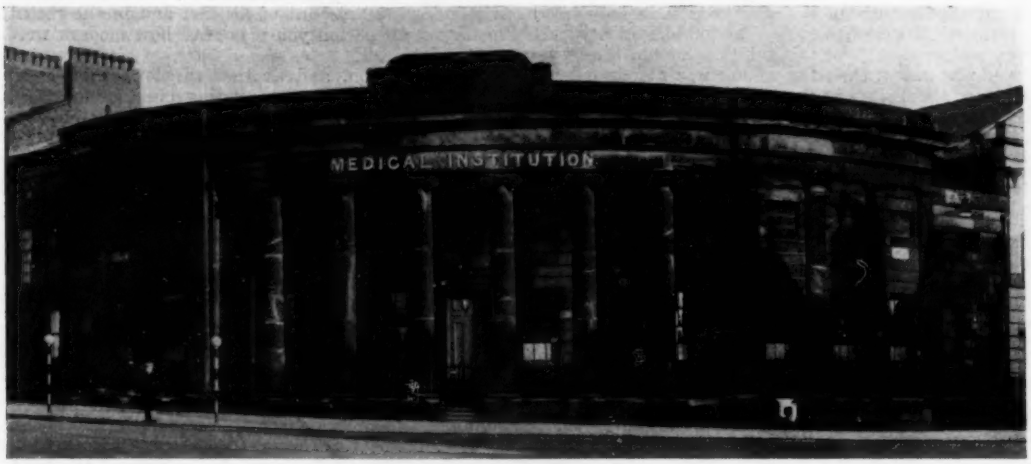

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Illuminating gas had only recently emerged from its primeval chaos to a municipal usefulness, and was used solely for street lighting; street lighting was, indeed, necessary, as, even in towns, one-fifth of the streets were never cleaned, drained, or even paved. Plumbing, though Harrington had invented it centuries before, was not extensive. Even if our surgeon had lived in one of the Georgian mansions fringing Everton Hill—the elegant district—he would have inhabited a house devoid of a bathroom. Envelopes and cigarettes were among the uninvented necessities of life, and in the list of the newer luxuries which had been the ruin of the country, Peacock had to fall back on blameless tea, late dinners, and the French Revolution.

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A good idea of surgery is given by the masterly lectures of the famous Astley Cooper published in the twenties. Inflammation, hæmorrhage, and ulceration occupy a disproportionate amount of space. Bleeding was still popular, especially in head injuries. There is a record of one patient who recovered after 130 oz. of blood were removed in the space of 11 days. Aneurysms must have been exceedingly common. Astley Cooper probably tied most arteries in the body, and on one occasion actually tied the abdominal aorta, though without success. He had seen seven separate aneurysms in one man. Although he dealt with hundreds of aneurysms in men, he records only 8 cases in women. He was aware of the dangers of secondary hæmorrhage when the usual long ligatures came away, and on one occasion he actually used a catgut ligature and cut the ends short. It was for a popliteal aneurysm and the artery was the femoral. No suppuration followed. He tried the same method several times subsequently but was never again able to prevent suppuration. What a tremendous observation this was!—and how near to a great discovery! The world had to wait for 40 years before the genius of Lister unravelled these conflicting results.

* * *

Astley Cooper's chapter on hernia shows that the only important operation for its relief was the operation for strangulation. Before any operation was advised the unfortunate patient was given a tobacco enema to relax the parts. He was then strung up inverted on the back of a porter, back to back, with the calves resting on the porter's shoulders. Cold water was then freely soused over him. If,

* From a presidential address to the Liverpool Medical Institution on May 31st, on the occasion of its centenary. The full text appears in the *Liverpool Medico-Chirurgical Journal* (1937, **45**, 5).

after all this, taxis failed, operation was done and the strangulation reduced. Surgeons had a holy dread of the peritoneum, and the abdominal cavity was never entered without misgivings. Should the bowel have perforated, then the wound was merely opened like an abscess. The few who recovered from this operation were left with a fæcal fistula which was later treated with a Dupuytren's enterotome, that ingenious instrument invented a century before Paul's method of enterectomy.

There is an amusing description in this same chapter on hernia of a butcher who had to be medically examined for the militia. He produced in himself a very large artificial scrotal hernia by nicking his skin, applying a blow-pipe to the hole, and blowing himself up until the surgical emphysema was large enough to mislead the Army authorities. The method was then in use for flaying animals, and is still used by whalers on the harpooned whale to keep it afloat.

Hydroceles were tapped and sometimes injected. Astley Cooper's favourite injection was port wine. This reminds me of some interesting Lancastrian reminiscences published in 1837. There is an account of a surgeon who, whilst awaiting the effect of a tobacco clyster in a case of strangulated hernia, consumed the best part of a bottle of port. This gave him such courage that, with his first cut, he sliced the integuments down to the gut and perforated the bowel. "Not a word or exclamation was uttered, but everyone expressed by a vermicular movement that the affair was desperate. The surgeon laid down his knife—the gazers vanished, the wound was dressed, the woman put to bed, and, in due time, encased in her coffin."

The great operation for the surgeon appears to have been the cutting for bladder-stone. The operation of lateral lithotomy, introduced into England by Cheselden, probably from Frère Jacques' work on the Continent, was really an operation of fine skill. It had to be performed on a squirming man trussed up and supported by two or more strong assistants. The knife had to engage the sound at a proper depth in a bleeding wound. The direction of the cut had to be so exact that neither the bulb, the rectum, nor the pudic artery was cut. The enlargement of the prostate must have been a common additional complication, and perforation of the bladder by the sharp end of the gorget often resulted in the stone finding its way into the abdominal cavity: and the whole operation had to be done in seconds or minutes. Bland-Sutton once said that the Spanish bull-fighter had to aim at a target on the side of the bull's neck no larger than 4 cm. in diameter. The extremely rapid operation of lithotomy on a sentient patient must have entailed the same anxieties, and demanded the same skill and accuracy as the coup-de-grâce of the matador.

* * *

The two great Liverpool surgeons of the eighteenth century were Henry Park and Edward Alanson. Park was the first surgeon to suggest excision of the tubercular joint instead of amputation, and Alanson the first to improve the method of amputation. Alanson was well ahead of his time. As early as 1779 when only 32 he published his great work. It is said that he always washed his hands and instruments before an amputation. Many of his cases healed by first intention, and he gave details of 40 consecutive amputations without a death, a most brilliant record for that date. He suggested country hospitals, iron bedsteads, clean bed linen, and open windows. Some years ago Mr. R. W. Murray gave us a delightful account of his life, and in the recent history of Bickerton you may read how modern were Alanson's ideals.

Park, Alanson, and another surgeon called Lyon conceived the idea of a reading club about 1770. They proposed to buy new publications conjointly, and divide the books at the end of each year. Before the plan was instituted the physicians joined them; the books were deposited in a room in the Infirmary, which became the nucleus of the first medical library.

* * *

In 1833 John Rutter, a quaker, the foremost physician of Liverpool at the time, thought that the Medical Society and Library were in need of a better house. He prevailed on the mayor and corporation to give to the doctors in Liverpool a free lease on a piece of land at the corner of Mount Pleasant and Hope-street. This land had been a bowling green and was valued at £557. He raised funds for the building, which was to contain rooms for both the library and a lecture theatre for debate. He persuaded the corporation not only to give a lease of the land at a peppercorn rent, but to give a grant of £1000 towards the cost of the building. Rampling was the architect. The building cost £4000. The doctors themselves subscribed over £1000, and the lay public £242.

Precisely on this day, May 31st, one hundred years ago, our building was opened. There was then a debt of £900 on it, but this was wiped off by a bazaar organised by Mrs. Dawson, the wife of one of the Infirmary surgeons.

Rutter lived only a year after accomplishing this great work. He was our first president. His ambition was that this should be a place which would promote the union and the interests of doctors, the health and welfare of the community, a place for study and mutual instruction, and a habitation for the library.

All these aims have been accomplished, and should Rutter, looking down from the Elysian fields, be aware of our meeting to-day, he will, I think, be as proud of this, his only child, as we are of honouring his illustrious memory.

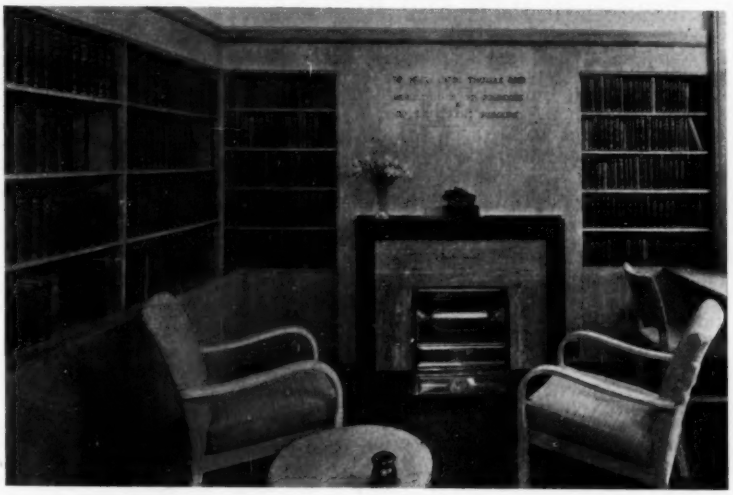
Liverpool Medical Institution
1837—1937

"*What Does, what Knows, what Is;* three souls, one man."

WHAT better terms of reference could a medical society have than the gloss of Theotypas, in Robert Browning's "A Death in the Desert," which develops and expands this doctrine? For medicine is not merely the practical work of tending the sick, nor even the intellectual excitement of studying disease; it is warmed and animated by humanity, in a common human experience and endeavour. In this uneasy, modern time of mass movements and the despising of the day of small things, when institutions and abstract ideologies are proclaimed in high places as more important than persons, it is wholesome to recall that medicine stands where it does because of the lives and achievement, through the ages, of a great host of individuals, some brilliant with genius, but most of them ordinary folk—"so little starres as have no name, no knowledge taken of them."

It is just a hundred years ago that the founders of the Liverpool Medical Institution met together for

the first time in the present dignified building which has given a local habitation and a name to the more corporate activities of those who practise the art of medicine in and about Liverpool. They foresaw it as the common centre of every useful and honourable professional undertaking—from the securing to medical men of a fair and just remuneration for their services, to the purposes of study and mutual instruction and an authoritative helpfulness in all matters affecting the health of the town. As a necessary foundation for these activities, they hoped "that it would be a means of uniting the different members of the profession in a firm and compact body, disposed at all times to co-operate strenuously and cordially in the prosecution of every measure which may conduce to the interests of all."



The Orthopædic Memorial Library. The inscription reads: "To Hugh Owen Thomas and Robert Jones, the founders of orthopædic surgery."

The idea of establishing such a common centre grew naturally (and surely inevitably) from a small medical reading club, which was the origin of the present medical library housed in the Institution. It grew inevitably, for Francis Bacon's words are especially true of medicine: "Naturall Abilities are like Naturall Plants, that need Proyning by Study; and Studies themselves doe give forth Directions too much at large, except they be bounded in by Experience." For the physician, scientific facts are but the food which must be metabolised if the mind is to bring forth fruit. A man must always be busy with his thoughts, he must exercise his intellectual powers as earnestly as an athlete trains his muscles, if judgment is to mellow. It is given to very few to live alone, and yet keep a sense of proportion; most of us need the criticism and help of our fellows, and this we can get in calm, disinterested, and sincere discussion. In a live medical society, men bring their knowledge and experience into the common pool, not to display but to convey information. It is, indeed, the tradition of our ancient and honourable brotherhood that a man shall gladly and honestly submit for the judgment and approval of his colleagues anything which may help to increase the body of medical knowledge. And when a man reveals to his fellows what he knows, he cannot but reveal also, to some extent, what he is. More important even than discussion and conference is the fellowship of a medical society, with its stimulating contacts of personality with personality. Here especially may be nurtured and realised the conception of medicine as the profession of a kindly, courteous, sincere, and cultivated gentleman.

This centenary is, therefore, the anniversary not only of the foundation of a building but also of a living medical fellowship. Those who will meet within its walls to commemorate the great occasion will surely feel that they are compassed about with a great cloud of witnesses. As they cast their eyes back through the years, they will rejoice at all excellence of achievement; and they will look forward with solemn resolve to maintain the fine traditions of their forebears.

The Celebrations

The programme began on Sunday afternoon when a service was held at the Cathedral attended by members of the Institution in academic dress and when members of the Guild of St. Luke, SS. Cosmas and Damian met at the Catholic Cathedral site for benediction. On Monday afternoon at the Institution honorary membership was conferred on the Presidents of the Royal College of Surgeons of England, of the General Medical Council, of the British Medical Association, of the British College of Obstetricians and Gynæcologists, and of the Manchester Medical Society, as well as on Sir James Barr, Mr. C. Thurstan Holland, and Mr. Frank T. Paul. The new honorary members were introduced by Prof. John Hay. After that Dr. Hugh A. Clarke was congratulated on the attainment of his jubilee of membership. Prof. R. E. Kelly then gave his presidential address. In the evening the centenary dinner was held at the Adelphi Hotel. On Tuesday afternoon the new library of orthopædic surgery, commemorating Hugh Owen Thomas and Robert Jones, was formally opened and Mr. W. Rowley Bristow, president of the British Orthopædic Association, gave the Hugh Owen Thomas memorial lecture. The programme ended with an At Home in the town hall given by the Lord Mayor.

MANSFIELD HOSPITAL. — This institution is endeavouring to raise £10,000 for a new women's ward. At present extra beds for female cases have been provided by alterations to the balconies of two wards and accommodation is strained to the utmost.

TRANSFERENCE OF A CROYDON HOSPITAL. — St. Mary's Hospital, Croydon, while remaining in trust of the Croydon mothers' and infants' welfare centre, had had its administrative work transferred to Croydon corporation and the expenses of the institution will be paid from the general rate fund. In order that the hospital may qualify as a training school under the Central Midwives Board a resident medical officer will be appointed.

PUBLIC HEALTH AND HYGIENE

A JOINT ANNUAL CONGRESS

As recorded in our last issue, the Royal Institute of Public Health and the Institute of Hygiene met in joint congress at Margate on May 25th under the presidency of Lord HORDER.

Captain G. S. ELLISTON, M.P., president of the section on State medicine and industrial hygiene, pointed out that this year, a hundred years after the passing of the Act imposing registration of births and deaths, the Government was to sponsor a campaign to interest the people in the maintenance of health by increased use of the services provided by local authorities and voluntary organisations. He approved of this measure, for in most areas health services were more or less complete and further progress must come from the people themselves; for example, only 50 per cent. of pregnant women went to antenatal clinics, many cases of tuberculosis were diagnosed too late, and attendance for later treatment of venereal disease was very lax. Reminding the audience that most services were promoted by the force of public opinion, he passed on to the consideration of some conditions now calling for attention. The first was chronic rheumatism, a condition about which no steps commensurate with its importance had yet been taken. Others were noise, cremation, smoke abatement, mental welfare, and child guidance.

HOUSING: THE BIRTH-RATE

Dr. J. GREENWOOD WILSON (M.O.H. for Cardiff), in a paper on the place of the health department in housing administration, maintained that the health committee should be made the paramount committee for housing administration. The medical officer of health should be encouraged to take more interest in housing both before and after he entered the public health service, and greater use should be made of the health department in branches of administration such as allocation of tenancies, disinfestation, and estate social work.

Speaking on the problem of the smaller authorities in the rehousing of overcrowded families, Dr. N. E. CHADWICK (M.O.H. for Hove) referred to some of the difficulties arising out of the overcrowding provisions of the 1935 Housing Act. In his district, at the time of the survey of overcrowding in January, 1936, 96 houses were found to be statutorily overcrowded; by June this number had been reduced to 69, and more recently it had fallen to 38. On the other hand, it was fully realised that fresh crowding had occurred at other houses. There were three ways in which large families could be housed—by converting two houses into one, by building new houses of sufficient size, and by acquiring existing old large ones. Houses built on sites far distant from the original home of the tenants could hardly be construed as "suitable alternative accommodation."

Dr. CARYL THOMAS (M.O.H. for Harrow) spoke on certain aspects of the declining birth-rate. He reviewed briefly the general situation, pointed out the effects both of a fall in population and of a changed age-composition of the population, and summarised measures taken, more particularly in some of the continental countries, to arrest the decline.

FOOD-POISONING: MILK

Dr. E. R. JONES (pathologist to the Kent county council), speaking on the epidemiology and bacteriology of food-poisoning, restricted his definition to acute gastro-enteritis caused by the ingestion of food or drink that contains either living bacteria or toxic substances produced by them. Such a definition excluded botulism. Since Gaertner isolated *Bact. enteritidis* in 1888, 26 other members of the salmonella group had been discovered. In certain cases of food-poisoning, however, no organisms could be found, and the illness appeared to be due to the formation of a heat-stable toxin in the food. Many of these organisms were ordinarily non-pathogenic, but under certain conditions of growth appeared capable of elaborating highly toxic substances. Among those incriminated were *Staphylococcus aureus*, *S. albus* (the commonest), members of the salmonella group, *B. coli*, *Proteus vulgaris*, *P. morgagni*, *Streptococcus viridans*, and a micrococcus associated with milk. It was not known whether specific toxins were elaborated by the bacteria or whether the toxin was formed from breakdown products of the dead organisms; but presumably the bacteria multiplied and elaborated their toxin in the food before its consumption; the subsequent cooking destroyed the organisms but did not materially affect the toxin. Seasonal variation in incidence was less conspicuous in this type of food-poisoning than in that caused by the more common salmonella type. The morbidity-rate was high (75 to 100 per cent.), but the fatality-rate very low. The type of illness was similar, but the incubation period shorter, being only half to four hours; symptoms were severe but the course was rapid, and the patient recovered in two or three days. The foods most commonly affected were canned meat, potted meat or fish, and milk products, more especially cakes and éclairs filled with cream or custard. Owing to the ubiquity of the organism, our inability to distinguish toxic from non-toxic strains and our comparative ignorance of conditions suitable for the production of toxins, outbreaks of poisoning of this kind were not only difficult to investigate but also harder to control.

The subject of milk was discussed from the point of view of the producer by Dr. L. MEREDITH DAVIES (M.O.H. for Devon) and as it affects the consumer by Dr. H. C. MAURICE WILLIAMS (M.O.H. for Southampton). Dr. Davies dwelt particularly on the financial troubles of the farmer producing different types of milk. Here he thought lay the difficulty in obtaining a satisfactory milk-supply, and until the margin of profit to the producer was considerably increased the bare essentials for the production of safe milk could not be realised.

CHILDREN

The MARCHIONESS OF READING, presiding over the section of women and children and public health, spoke on the "pre-school child." She thought that all blocks of flats should be fitted with nurseries on the top floor or on the roof opening to a roof garden, or that children's homes should be attached to each block at which mothers could leave their children for short periods. She submitted that the combination of a day nursery and nursery school is the ideal provision, and referred to the many advantages of the large unit from the standpoint of cost and efficiency. Now that these were run on open-air lines there was little risk of infections spreading among the children.

Colonel R. A. BLACKHAM read a paper on infant feeding in warm climates. He strongly advocated the use of sweetened condensed milk, as being stable, easily transported and not easily tampered with, and quoted many French authorities in support of this

view. He also defended the use of cane-sugar in infant feeding.

Dr. WILFRID SHELDON (physician in charge of the children's department, King's College Hospital), speaking on diet and dietetic indiscretions after infancy, dwelt more particularly on the period between the child's first and second birthday—the time, he said, when errors both of omission and commission are most likely. By the child's first birthday it should have abandoned the bottle and have its feeds at the times of the adult. He deprecated the giving of cream to any healthy child; the ingestion of more than one pint of milk daily was a mistake because it resulted in the refusal of other food. Dr. Sheldon preferred cod-liver oil to any of the vitamin A concentrates because it carries no risk of over-dosage, because it has a food value of its own, and because it contains the complementary vitamin D.

In a discussion on the staffing of antenatal and infant welfare centres, Dr. C. K. J. HAMILTON (physician in charge of the children's department, Charing Cross Hospital) envisaged the need of certain auxiliary services as essential to the ideal functioning of an infant welfare centre including a breast-feeding clinic, a play centre, and an observation ward. Dr. VYNNE BORLAND (M.O.H. for Bethnal Green) said that the aim of the services was to make maternity as safe as possible, and afterwards maintain good health in mother and child.

PREGNANCY TOXÆMIA

Miss MARGARET BASDEN (gynæcological surgeon to the South London Hospital for Women), speaking on albuminuria and eclampsia, quoted Prof. F. J. Browne's finding that a blood-pressure reading of over 130/70 is usually the earliest sign of toxæmia, often preceding albuminuria by several weeks. She would treat all cases with readings of over 130 as suspect. While it was true, generally speaking, that the more the albumin the worse the case, the converse did not hold, for cases with only a trace might prove very severe. The risk in albuminuria was not only a risk of eclampsia but also a risk of permanent damage to the kidneys. Such damage depended not so much on the severity of the illness as on its duration, and Miss Basden recommended that toxæmia should never be allowed to continue for more than two or at most three weeks. As symptoms rarely appeared before the thirty-second week of pregnancy the only remaining treatment of an obstinate case—namely, termination of pregnancy—did not necessarily mean the loss of the child. In any event the effect of the toxæmia is more damaging to the infant than the prematurity.

EARLY DIAGNOSIS OF CANCER

Dr. ELIZABETH HURDON (director of the Marie Curie Hospital, London), in a paper on the diagnosis of cancer in relation to its prevention, said that in no other department of medical research had so much been discovered within recent years. It was probable that cancer did not arise in perfectly healthy tissue, but in tissues or organs which had been the seat of pathological change. The list of chemical, bacteriological, mechanical, or physical factors which operated as predisposing causes was being extended and the public needed to be educated to the importance of these factors, so that where necessary they would seek medical advice as to their removal. Dr. Hurdon was hopeful of benefits accruing from statistical investigation, pointing out that whereas the incidence of cancer of the non-exposed site was the same in all social classes, that of disease in the exposed sites—the skin, larynx, and upper alimentary tract—showed considerable increase in incidence on descending the social scale. This suggested that other environmental conditions, such as defective hygiene, might be responsible for the greater incidence among the poorer classes.

NUTRITION AND PHYSICAL TRAINING

In the absence of the president of the section of nutrition and physical training, Sir STANLEY WOODWARK (physician to Westminster Hospital), his address was read. He pointed out that just at the time that there was more leisure, there were more difficulties in the way of obtaining enough healthy physical exercise each day. While commending the national movement towards more and better physical training, he urged that the aim should be a supple body with mind and muscle closely coördinated—a harmony of bodily function leading to perfect rhythm and balance. This meant that the body must be sufficiently nourished, and he thought that attention should be paid to optimum rather than minimum diets. Sound nourishment however did not merely depend on a sufficient supply of food; there were many dietetic crimes, such as the bolting of meals, inefficient cooking, the presentation of the same dishes with monotonous regularity, and the belief that the most expensive food was necessarily the most nutritious weight for weight. Sir Stanley looked forward to the time when every housewife, as a result of tuition at school, will be able to buy food economically, cook it conservatively and well, and serve it in well-balanced physiologically adequate meals.

Prof. S. J. COWELL (professor of dietetics in the University of London) said that though there was not much gross malnutrition, in the sense of semi-starvation, faulty diets were probably responsible for much more ill health and disease than was imagined only a few years ago. The problem of malnutrition in this country was much more a problem of deficiency in essential food constituents than of deficiency in total supply of food. He touched on the importance of the recently discovered tests for minor degrees of vitamin deficiency—vitamin A by impaired vision in dim light; vitamin B by its concentration in the blood; and vitamin C by its estimation in urine—and said that these should result in the detection of sub-optimal nutrition, not apparent on clinical examination. He summarised the relation of nutrition to infection by suggesting that the course of certain chronic infections such as tuberculosis was related rather closely to the state of nutrition, and that many acute infections, especially in childhood, ran a more favourable course in those whose previous diet had been good. His conclusions on the relation of diet and dental decay were that diets rich in protective factors, given during the whole period of development of the teeth and continued throughout life, would not only encourage the formation of sound teeth but would do much to prevent dental decay. There was increasing evidence that an inadequate supply of protective foodstuffs initiated or predisposed to some of the disturbances of pregnancy, such as osteomalacia, muscular cramps, and possibly some of the toxæmias. As a practical measure it was unnecessary to instruct the public in the exact amount of the various constituents of food required, but they should get used to the term "protective foods" as being those that are rich in mineral elements and vitamins likely to be relatively deficient in common diets. They must learn that a good health-giving diet should

contain a large proportion of its total energy value in the form of protective foods, the younger the person the greater being the proportion.

Miss E. M. WIDDOWSON (research biochemist at King's College Hospital) referred to the importance of the minerals in maintaining osmotic pressure and acid-base balance, and in regulating all chemical processes. Of the fifteen different mineral elements in the body, each of which had its own part to play, deficiency was most commonly found in calcium, iron, phosphorus, and iodine, the two most often lacking in diets in this country being iron and calcium. To supplement calcium deficiency she advocated the greater use of cheese, milk, eggs, green leaf vegetables, and nuts; of these, milk was the most important single source. Iron was found mostly in meat (especially liver), eggs, brown bread, and green vegetables. There was often a deficiency of iron during pregnancy. It was important that it should be given in a form in which it would be available to the body.

TUBERCULOSIS

Dr. R. A. YOUNG (consulting physician to the Middlesex Hospital) gave a presidential address to the section of tuberculosis. He spoke particularly of the need for early diagnosis and for teaching the laity to think bacteriologically. The undiagnosed case was dangerous to the community and he pleaded for the more thorough examination of all patients suffering from chronic bronchitis, from persistent cough and phlegm, from hæmoptysis however slight, from pleurisy or from unexplained loss of weight or condition, or evening tiredness. Clinical examination should be supplemented by bacteriological tests and radiography.

Dr. F. G. CHANDLER (physician to St. Bartholomew's Hospital) submitted that prolonged isolation of tuberculous patients was often unnecessary; they could return to their homes if they and their relatives understood how the disease was spread, the necessity for care of the cough and the phlegm, and of handkerchiefs, pillow-slips, and sheets, and the importance of ventilation and fresh air.

Dr. J. G. JOHNSTONE, speaking on tuberculosis of joints, said that the guiding principles in local treatment were to arrest the active disease, by stopping movement of the affected joint, and reduce the functional disability by immobilisation in the correct position, and by preventing deformity in any other joint.

Dr. E. L. SANDILAND (medical superintendent of the East Lancashire Tuberculosis Colony) dealt with the after-care and re-employment of the tuberculous patient. The chronic tuberculous population could be divided into the 15 per cent. of chronic invalids who would always remain a medical problem for others, the 50 per cent. who could return to their former employment or some modified form of it, and the 35 per cent. who could not return to their former employment either because it was unsuitable or because they could not compete with healthy men. The last group was the one for which after-care schemes were intended. The three principal forms of provision made were workshops set up by after-care committees or local authorities, the employment of ex-patients on the staffs of sanatoriums or similar institutions, and the establishment of village settlements, with industries attached, where the ex-sanatorium patient could have sheltered conditions, medical supervision, and a house away from his former habitation.

RHEUMATISM

The section on rheumatism and allied diseases met under the presidency of Sir ROBERT STANTON WOODS (physician in charge of the department of physical medicine at the London Hospital). Dr. SINCLAIR MILLER (medical director of the Harrogate Investigation Clinic) spoke on the ætiology of chronic arthritis, and Dr. DOUGLAS COLLINS (research fellow in rheumatism at the University of Leeds) referred particularly to the importance of trauma and infection as ætiological factors. It was a mistake he thought to ignore the local condition of the joint while concentrating on the general physiological behaviour of the arthritic patient. Dr. FORTESCUE FOX (president of the International League against Rheumatism) read a paper on "vicious spirals" in chronic rheumatism; Dr. JOHN POYNTON (consulting physician to University College Hospital) opened a discussion on the ætiology of rheumatism in children, and Sir FRANK FOX (organising secretary of the Empire Campaign against Rheumatism) summarised the history of the development of the movement. He pointed out that insufficient attention had been paid to rheumatism, in spite of the great suffering it caused, because it lacked the dramatic element.

PANEL AND CONTRACT PRACTICE

What is a Partner?

FOR health insurance purposes a partner must, as prescribed by Clause 11 (8) of the terms of service, be in the position of a principal in connexion with the practice and entitled to a share of the partnership profits which is not less than one third (in Scotland one half) of the share of any other partner. An insurance practitioner recently told an insurance committee that he had taken into partnership another practitioner. When asked whether the terms of the partnership agreement conformed to the requirements of Clause 11 (8) he said that his partner was not entitled to any stated share of the profits but was in receipt of a salary which, together with certain allowances, amounted to a sum greater than one-third share of the profits of the partnership. The Ministry of Health expressed the view that although there was nothing in the facts set out above which necessarily negatived the existence of a partnership it might be desirable for the insurance committee to satisfy themselves as to the position by an examination of the deed of partnership if any. The practitioners were unwilling to submit the deed for examination, and the committee felt some hesitation in accepting the view that the salaried partner could be considered in the circumstances as entitled to a "share of the profits" and they asked for further advice. The Ministry took the view that the word "salary" implied the payment of a fixed sum payable out of the profits so long as the profits were sufficient to meet it. Presumably the committee would also have to be satisfied that provision had been made for the salary of the junior partner to be increased if the profits of the partnership should increase to such an extent as to make his present salary and allowances insufficient to comply with the terms of service.

Visitation of Surgeries

The Cheshire insurance committee have been trying to arrive at agreement with the panel committee about the visitation of surgeries. They

asked the panel committee to appoint members to meet an equivalent number of members of the insurance committee to consider and report upon the general question of surgery and waiting-room accommodation, but the panel committee decided to take no action. The Ministry of Health was then asked what other course was open to the insurance committee to secure the provision by insurance practitioners of proper accommodation for their insured patients. The Ministry suggested that the panel committee would hardly withhold their coöperation in the event of any specific cases being brought to their notice where it appeared to the insurance committee that there was ground for regarding the accommodation provided as unsatisfactory. And this proved to be the position. The secretary of the panel committee said that on a complaint being made they would be glad to coöperate, but they had a strong objection to a roving commission to examine anybody's premises irrespective of complaints. After some discussion it was decided that any complaint as to the accommodation in a specific case, brought in duly authenticated form to the notice of the insurance committee, should be investigated by a joint committee of the insurance committee and the panel committee.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index.

FROM TWELFTH MAN

I

To sit in the pavilion while one's betters are batting can be a disintegrating experience. For a week past I have sat in the pavilion. I have re-read all the contributions to this Grains and Scruples series from the very lively knock with which West-country Practitioner opened the innings last July to the sound and stylish display by A Medical Economist. I have been amused, instructed, stimulated—and, now, when it is my turn to go in I am heartened by the knowledge that if Twelfth Man edges a lucky ball between first and second slip to the boundary there is a ripple of surprised applause.

* * *

These Grains and Scruples have indeed been surprising. Here are twelve doctors (and more apparently to come) who are willing to write from five to ten thousand words about a broomstick or nothing at all. There can, I think, be but one reason for this. Many doctors have an unsatisfied desire for self-expression. This is the modern explanation for ill-behaviour in the nursery and it explains equally well these essays which have lightened for the last eleven months the pages of THE LANCET. That doctors lack self-expression is, I believe, true. Our unhappy function is, too often, to listen and, too often, when we talk it is to use "vain repetitions as the heathen do." If we are having a preliminary gossip—well, there is the weather or the films and when we come to the real business of the patient's health how frequently we play the same record. I doubt whether the practice of a first-class physician equals in variety the practice of a leading counsel; it does not elicit a comparable number of mental responses nor stimulate as complicated a series of conditioned reflexes. The physician, for example, whose practice has an "abdominal" bias will, in a year, see some hundreds of patients with an ulcer, an intestinal carcinoma, or an abdominal neurosis. How often must these patients receive advice in much the same terms.

For the mutual convenience of physician and patient it is customary to have typewritten sheets of instructions for the victim's future regimen. At the end of a hurried interview with a physician a patient of mine was handed three such sheets. "A guinea a sheet. Do I pay you directly or does the money go into the slot-machine?" asked my patient rudely.

And how stereotyped must the reactions of lesser men become. I sit at a bridge table with a fat lady as my partner, and she asks: "What is your call, doctor?" It is with difficulty that I refrain from replying: "Three rye biscuits. Take one potato where three crept in. Eat as much of lean meat, of green vegetables——."

Next to me sits a successful business man. "Your calling makes me giddy, doctor." I want to reply: "Take it easy. Avoid stress and strain. John Hunter said he was at the mercy of any man who made him lose his temper. Live within the limits of your circulation. Grow old gracefully. Make your changes of posture slow and deliberate——."

My readers, if any, will recognise these records. They are part of our common heritage. Hippocrates played them. So we go through our professional life with our small group of conditioned responses. How worrying and how annoying it is when a patient presents a group of symptoms and signs that refuse to fit into a syndrome. As difficult as it was for Pavlov's dog when his master altered the dinner bell by a semitone. Thus it is that our minds lack elasticity, and our flow of ideas is constipated. Thus it is that A Departmental Doctor wrote, "Regarded, at any rate as an interesting companion, as a desirable neighbour at dinner, the doctor was ranked considerably below the barrister and, a little more doubtfully, lower than the priest." Thus it is that so many were glad to accept the invitation to contribute to the Grains and Scruples series. Here was a stimulating chance for unfettered self-expression.

* * *

This unsatisfied desire for self-expression may encourage the doctor off his guard into unwise confession to his patient. His wish to help the psychoneurotic may also lead him to confess a like frailty. I remember a dramatic instance of this. Many years ago a physician in the out-patient department of a large hospital was examining a boy in front of a class of students. He took the lad behind a screen and after a few minutes both emerged. The physician addressed the class: "I thought so. The boy's a masturbator." The boy burst out: "You sneak! You said you wouldn't tell, and anyway you said you did it yourself when you were a boy." Confession may be obligatory in an Oxford Group meeting but such sharing is out of place in a consulting-room.

* * *

It is doubtless necessary for these Grains and Scruples articles to be temporarily anonymous,

but it diminishes their "news-value." Did not A Rover write that a newspaper proprietor would pay a hundred guineas for signed articles by medical men in the lay press but only five guineas if they were unsigned? And would not even the readers of THE LANCET have settled down in greater numbers to relish the incisive wit of A Rover had they known he was A in person; and enjoyed more keenly the urbanity of A Departmental Doctor had they known he was B and the author of C; and delighted more in the mild humour of A Doctor in Retirement if they had known he was D and the author of E and F? They would. For who can lay his hand on his heart and deny that he brings a more lively expectation to sharpen the edge of his critical faculty when he knows himself to be looking at a Goya or a Vermeer? George Robey lifts an eyebrow and the house rocks with laughter, while the innominate comedian works desperately through a few painful moments for his first laugh. Still anonymity has its advantages. It seems possible that someone may glance down this page finding Twelfth Man a more attractive superscription than X, and I like to think that I could not have enjoyed more keenly the sanity and wisdom, the quintessential common sense, of A Rusticating Pathologist had I known who he was. He described the town where I have lived happily for ten years as a place where the sun seldom shines and listed it, as an undesirable habitation, with Central Asia, Tierra del Fuego, Arctic Canada, and Orkney.

* * *

It is difficult to guess to what extent the professional journalist welcomes and to what extent he resents the incursion of the amateur into his specialty. I have no doubt that the office staff of THE LANCET could have written these Grains and Scruples a great deal better than have its invited guests. The late Lord Salisbury described a popular daily paper at its inception as written by "office-boys for office-boys"! To-day it may be written by impoverished politicians, gossiping peers, pamphleteering clerics, and pseudo-scientists whose standards are no more worthy than their predecessors', the office-boys. Not that the amateur's contribution to journalism has been entirely without value. The best things in the *Times* are Bernard Darwin's weekly article on golf (it might equally well be written on darts or tiddleywinks), the fourth leader and the correspondence columns. No Saturday is completely ill-spent that starts with Bernard Darwin. Many a breakfast-table has been rescued from disaster by the fourth leader. What could add more relish to the eggs and bacon than to read Winston Churchill admonishing Lord Hugh Cecil, who had apparently expressed at one time or another disapproval of Italy, France, Japan, Nazi Germany, and Soviet Russia: "It must be very painful to a man of Lord Hugh Cecil's natural benevolence and human charity to find so many of God's children wandering simultaneously so far astray. . . . In these circumstances I would venture to suggest to my noble friend, whose gifts and virtues I have all my life admired, that some further refinement is needed in the catholicity of his condemnations"?

Or Prof. John Hilton's strictures on certain members of the House of Commons, "Yet it is not altogether a matter for mirth that elected persons should so eagerly allow themselves to be made the butt of informants defective in hearing, wits or veracity. A certain amount of silliness in public life adds to gaiety and does no harm. But in excess it might spell our doom!" There was a long correspondence recently in the *Times* on the value of Family Prayers. This dying habit received the most enthusiastic support from clerics and retired members of the services. A long, wearisome, and occasionally painful experience of Family Prayers makes me certain that the day is better begun with Bernard Darwin, the fourth leader, and letters to the Editor.

In parentheses, why is it that every strange sect, every exotic enthusiasm, every society of cranks draws its chief support from retired members of the services? Is it because these admirals and generals have grown tired of discipline and orthodoxy? Or because they have learnt that the secret of happy retirement is the espousal of a cause that is predetermined to be lost?

* * *

Medical journalism, like all trade journalism, is a different cup of tea. Here a small group of professionals drives a team of ill-assorted amateurs. (If I had been the editor of THE LANCET I should have asked A Chronicler to have completed his fascinating history of medical journalism by telling of its present difficulties, its pitfalls, its humours, and its anxieties.) The job of the professional is to invite, to cajole, and to flatter these "expert" contributors, and to edit, alter, improve, or refuse their contributions. This is a difficult task. Most of these experts would refuse with disdain the advice that a playwright accepts meekly from his stage-manager. They would retire in dudgeon if they had to endure the treatment that the scenario-writer receives at the hands of the Hollywood producer or even the cutting that the copy of a working-journalist gets from his editor. They are thin-skinned, hypersensitive, of an inordinate vanity. This is the first difficulty of a medical editor. Why does not the scenario-writer withdraw his services when his work is mutilated? *Because he is well paid.* I know nothing of the balance sheet of the weekly medical journals. I know, however, that they have a circulation which compares favourably with the circulation of other weekly journals and they have access to an advertising field without rival. Perhaps the only way for the editor to deal ruthlessly with his difficult team would be to pay them for their signed contributions.

* * *

The second difficulty for the editor of a weekly medical journal must lie in the diverse interests of his readers. There must be much for the general practitioner and physician but something too for those who practise a specialty. Considering those difficulties weekly medical journalism maintains an extraordinary high standard. It has one fault. Like all other forms of journalism there is a great deal too much of it. To be presented on Friday morning with a journal the equivalent in acreage of a full-length novel and another of the same size on Saturday morning must overwhelm the leisure of the least busy doctor and fatigue the most receptive mind. The individual articles are often of an incredible prolixity. I find the clinicians generally more verbose than the laboratory-workers. The researchers produce reports that are often models of lucid brevity. In a recent issue of THE LANCET Dr. A. Q. Wells filled little more than a column with his exciting discovery of tuberculosis in field-voles. I tremble to think how some of us would have been tempted into an access of "windy blether" on such an occasion. We should have begun with accounts of the field-mouse in literature (deliciously apt quotations from Robert Burns), the varieties of

field-mice, and their habits and diseases; proceeded to a discussion of the *Mycobacterium tuberculosis*, its identity and methods of culture; indicated in a few modest pages the implications, the potentialities, and the cosmic significance of our discovery and rounded the whole thing off neatly with a verbatim report of the 134 post-mortems and some decorative micro-photographs.

I realise that it is not necessary for me to read anything that I do not wish to read and, indeed, it is common enough to hear a man say "Life's too short to read articles from start to finish. I only read the summary and conclusions." It is on behalf of the weaker brethren like myself, that I cry mercy. We are not so strong-minded nor so wisely economical of our time. Too often, like a character of Aldous Huxley's, we "creep, from cover to cover, like a beetle through dung."

* * *

I do not doubt that a living dog is better than a dead lion, but what if the lion being dead yet roareth? I was told by a neurologist that one of his prized possessions is an article by Hughlings Jackson on the different levels of humour—the lowest level dependent on incongruities of situation and the highest level that of organised wit: the whole thesis, as the bookseller's catalogues say, embellished with numerous illustrations. This may not be a subject of general medical interest, but why should not the medical journals reprint selections from the works of Paré, Laennec, Trousseau, Addison, Graves, Gee, Hughlings Jackson, and Osler? And even the "Regimen Sanitatis of Salerno" so beloved of Taddygaddy. They might be the beginnings of a liberal education for others besides myself.

There was a distinguished Victorian who said that every time a new book was published he turned back to read an old one. The idea is a sound one but difficult of execution in a day when new books, like mugs, are born every minute.

CORRESPONDENCE

DIAGNOSIS AND TREATMENT OF GASTRIC AND DUODENAL ULCER

To the Editor of THE LANCET

SIR,—In his paper published in your issue of May 22nd, Dr. Duncan Leys makes a number of statements which ought not to be allowed to pass without criticism.

1. He says that gastric carcinoma is relatively uncommon. This is hardly the correct term to apply to a disease from which no less than 16,000 individuals die each year in Great Britain.

2. He suggests that the greater incidence of gastric than duodenal ulcers in his series of 58 cases represents the true facts, and that all statistics showing a greater incidence of duodenal ulcer are incorrect because they are founded on surgical experience. My own series of 399 duodenal compared with 114 gastric ulcers at New Lodge Clinic and Prof. Ryle's of 563 to 131 seen in private prove how unfounded is this assumption. The difference between our statistics and those of Dr. Leys is almost certainly a result of the difference in the social class of the patients, gastric ulcer being relatively much more common in hospital than in private practice. Thus whereas the relative incidence of duodenal ulcer and gastric ulcers in the comparatively well-to-do as calculated from our figures is 962 to 245, or 4 to 1, combined statistics from Guy's and St. Bartholomew's Hospitals give 875 duodenal to 1013 gastric ulcers.

3. There must be something radically wrong with Dr. Leys's method of testing for occult blood. Using Dr. Ryffel's technique for the guaiac reaction and the spectroscopic examination for hæmatoporphyrin and acid hæmatin, the exclusion of blood and chlorophyll from the diet is essential, as otherwise a positive result is almost always obtained. Occult blood is present in 100 per cent. of cases of carcinoma of the stomach and in at least 95 per cent. of gastric and duodenal ulcer; in a large majority of cases it is still positive for several days after the disappearance of the niche seen with the X rays, and its disappearance can be regarded as the most valuable evidence, short of gastroscopy in the case of gastric ulcer, of the persistence of an organic lesion.

4. Few physicians of experience would agree with Dr. Leys that "a patient with achlorhydria and long-standing indigestion, whatever the age" has "gastric or duodenal ulcer." He has either chronic gastritis or carcinoma; he certainly has not a duodenal ulcer and almost certainly not a gastric ulcer, as we have never found achlorhydria in any of our 399 cases of duodenal ulcer and only once in our 114 cases of gastric ulcer at New Lodge Clinic; in the single exception free acid returned after a short period of dieting, which it would certainly not have done had carcinoma been present.

5. Though I have often protested against the excessive employment of surgery for gastric and duodenal ulcer, I cannot but be amazed to read that "perforation remains the sole indication for surgical interference."

I am, Sir, yours faithfully,

ARTHUR F. HURST.

New Lodge Clinic, Windsor Forest, May 26th.

SULPHÆMOGLOBINÆMIA AND METHÆMOGLOBINÆMIA AFTER SULPHANILAMIDE

To the Editor of THE LANCET

SIR,—Since making our communication on sulphæmoglobinæmia and methæmoglobinæmia following administration of *p*-aminobenzenesulphonamide (published in your issue of May 15th) a case has occurred in which methæmoglobinæmia and sulphæmoglobinæmia were found successively.

The case was one of septic abortion (cervical smear: non-hæmolytic streptococci) in a patient aged 33. No sulphates were given and she received 36 grammes of sulphanilamide in six equal doses during the 2nd and 3rd days after admission to hospital. By the evening of the 3rd day she was very cyanosed and administration of the drug was stopped. Examination of the blood at this time revealed the presence of methæmoglobin only. The blood was again examined on the 6th day when sulphæmoglobin but no methæmoglobin was found. By this time cyanosis was slight but it persisted until the 16th day after admission. Administration of sulphanilamide was recommenced on the 8th day and continued until the 15th day but only in doses of 3 g. daily and, in order to minimise the risk of aggravating the sulphæmoglobinæmia, the lower bowel was frequently washed out with enemata. There was no apparent increase in cyanosis or sulphæmoglobinæmia after recommencing administration of the drug but the sulphæmoglobinæmia could be detected until the 29th day. The patient had received ten minims of acid. hydrochlor. dil. before each dose of sulphanilamide.

We believe that only one case of methæmoglobinæmia and sulphæmoglobinæmia in the same

patient has previously been recorded (R. L. Waterfield: *Guy's Hosp. Rep.* 1928, **78**, 265).

These findings support our conclusions regarding the relative persistence of methæmoglobin and sulphæmoglobin in the blood and our belief that giving hydrochloric acid may increase the liability of this drug to produce methæmoglobinæmia. The fact that in some cases slight sulphæmoglobinæmia occurs apart from administration of sulphur or its compounds does not disprove that sulphur has been responsible for many of the cases of sulphæmoglobinæmia recorded after giving sulphanilamide or other drugs. Rather does it emphasise that certain substances have an accelerating action on sulphæmoglobin formation (in vivo if not also in vitro) and that when such substances are being given as drugs a high concentration of sulphur in the alimentary tract should be avoided as far as possible both by excluding its administration and keeping the bowels open with non-sulphur-containing laxatives.

In examining the blood of the case herein described we have, of course, made all necessary tests to distinguish sulphæmoglobin from methæmoglobin. Sulphæmoglobin and methæmoglobin did not appear to be present simultaneously in the blood.

We are grateful to Dr. Thomas Archibald of Belvidere Isolation Hospital for giving us facilities to investigate this case and those previously described.

We are, Sir, yours faithfully,

JAS. C. EATON,
J. P. J. PATON.

Glasgow, May 28th.

EXPERIMENTS ON THE ÆTIOLOGY OF LUNG TUMOURS

To the Editor of THE LANCET

SIR,—In the leading article in your last issue it is pointed out that the incidence of lung tumours in certain inbred strains of mice is increased by subcutaneous injection of carcinogenic agents—e.g., dibenzanthracene. You ask: "But why is the carcinogenic action of these substances focused on one organ—in this case the lungs?" I suggest that an extra stimulus comes from the external environment.

Some of my results—of prolonged dusting experiments with mice—which are being published next month, indicate that there may be an extra stimulus in the lungs—namely, some irritant or irritants inhaled in atmospheric dust. The lung is thus subject to constant irritation in this way even in ordinary atmospheres, but usually the degree of irritation is below the threshold. The subcutaneous injection of dibenzanthracene increases the susceptibility in certain strains so that the minor degrees of irritation may suffice to start the tumour in the lung. I am inclined to think that many of the earlier animal experiments with dust were of too short a duration, so that a reasonable conclusion could not possibly be attained. Lung tumours are usually late in development in mice as well as in man, where the mean age at death is 55 years.

I am, Sir yours faithfully,

London, N.W., May 29th. J. ARGYLL CAMPBELL.

TREATMENT OF DRUG-ADDICTION

To the Editor of THE LANCET

SIR,—In your issue of May 22nd Dr. Vivian describes the use of autoserotherapy for drug addiction. I first made a note of this method when I read of it in a League of Nations publication about two years ago. It appeared to me that its results depended purely and simply upon the injection of serum, and I therefore decided to test the effects of autohæmotherapy—i.e., the re-injection of whole blood removed from the patient. My cases have been too few for publication, but the results in two of them were very striking. In a case of morphine addiction the patient had twice discharged herself from the hospital to which she had been admitted for this condition. She consulted me to obtain supplies, but since treatment two years ago, she has been completely free from craving. In a case of severe alcoholism sent to me by the probation officer of a police-court the patient appears to have been cured; there has been no relapse for over a year. I have found a dose of 4 c.cm. adequate, and the best interval between doses seems to be four days.

I am, Sir, yours faithfully,

Camden-road, N.W., May 31st. H. SEARLE BAKER.

NÆVOID AMENTIA

To the Editor of THE LANCET

SIR,—In Mr. Ralph Bates's interesting case of nævoid amentia published in your last issue a radiogram of the skull is said to show irregular areas of calcification in the frontal region compatible with calcification in a plexiform angioma. Unfortunately little can be learned from the reproduction of the radiogram (Fig. 2 of Mr. Bates's paper) as to whether the shadow due to the calcification has the "festooned" appearance seen in other typical cases (compare the illustrations in the *Proceedings of the Royal Society of Medicine*, 1928–29, **22**, 431).

Are plexiform angiomata in the *frontal lobe* more likely to be associated with amentia than others? There was no amentia in Dr. C. P. Symonds's case (*loc. cit.*, p. 440) in which the meningeal nævus was mainly of the left occipital lobe. One would have thought that those on the right side of the brain, as in Mr. Bates's case, would be less likely to be associated with amentia than those on the left side; but then in Mr. Bates's case it is the frontal lobe which is chiefly involved. According to K. H. Krabbe (*Arch. Neurol. Psychiat., Chicago*, 1934, **22**, 737) the intracranial calcification is generally limited to the occipital lobe; according to H. Bergstrand (*Abstracts of the Second Internat. Neurol. Congress*, London, 1935, p. 124) and H. Olivecrona (quoted in *Lancet*, 1936, **2**, 752) röntgenological evidence of calcification is obtained in only a minority of cases, and in abortive forms epilepsy is often the only symptom.

I am, Sir, yours faithfully,

London, W., May 29th. F. PARKES WEBER.

PERNICIOUS ANÆMIA IN AN INFANT

To the Editor of THE LANCET

SIR,—Dr. Smallwood's letter, in your issue of May 29th, does not contain the all-important news as to whether or not any of his cases of subacute hæmolytic anæmia had histamine-refractory achlorhydria. The case of pernicious anæmia in an infant, recorded by Langmead and Doniach, showed this feature, which, when taken in conjunction with the other findings, caused the infant's syndrome to resemble pernicious anæmia in every particular. The fact that the pernicious anæmia syndrome is almost unknown in infancy cannot alter the fact that when it does occur, it just does. Urinary obstruction due to prostatic disease is a condition peculiar to old men; I have seen it in a young child.

Dr. Smallwood rightly states that achlorhydria is common in sick infants, but this is not true when histamine is used to stimulate secretion of gastric juice; it has been sufficiently rare in my series of

cases always to raise in my mind the lurking suspicion that the nurse, with more zeal than discretion, has injected the histamine into the wrong baby or used a blocked needle. He is also right in saying that I do not call the megalocytic anæmia of cœliac disease pernicious anæmia; surely he should know that no alumnus of the Birmingham Children's Hospital could be guilty of such an aberration.

I am, Sir, yours faithfully,

Harley-street, W., May 29th. J. C. HAWKSLEY.

INSULIN THERAPY IN MENTAL DISORDER

To the Editor of THE LANCET

SIR,—An Association of Insulin Therapists in Psychiatry has been formed with Dr. G. W. B. James as president. The objects are to hold meetings to discuss all matters arising from insulin treatment, to catalogue and make available the international literature, and to discover by discussion and correspondence the most efficient foundations of prognosis and after-care. The Association welcomes all workers in this method. I shall be able to answer any inquiries from those interested.

I am, Sir, yours faithfully,

EDWARD LARKIN,
Secretary, Association of Insulin Therapists in Psychiatry.

West Ham Mental Hospital, Goodmayes, Ilford, Essex, May 27th.

TRACHOMA IN REFUGEE CHILDREN

To the Editor of THE LANCET

SIR,—As president of the International Organisation against Trachoma, Mr. A. F. MacCallan is clearly in a position to make ex-cathedra statements as to the dangers of introducing this disease into England, and to warn the Ministry of Health against so doing. It is unfortunate, however, that before a question was asked in the House of Lords about the matter, with its inevitable repercussions and alarms, Mr. MacCallan should not either have got in touch with any one of those directly concerned with the medical examination of the children, or have made some inquiries as to the incidence of trachoma in the Basque district. He also appears to have assumed a trifle uncharitably that because the "gentlemen" who examined the children before embarkation in Bilbao were without special knowledge of ophthalmology, they were therefore also lacking in the elements of common sense. We did, in fact, make it our first duty on arrival in Bilbao to inquire from the public health authorities as to the incidence of trachoma in the Basque district, and found that of recent years it has been extremely low. This was confirmed by a Spanish ophthalmic surgeon of many years' experience in Bilbao, who accompanied the children to England. Mr. MacCallan's statements as to the high incidence of trachoma in certain provinces of Spain, apparently based on the report of the Consilium Ophthalmicum (1929, **13**, 113), apply to the districts of Murcia, Almeria, Valencia, and Castellon. The suggestion however that trachoma is "practically universal" is so palpably exaggerated that it is surely based on a misunderstanding of Prof. Soria's statistics. The figure 90 per cent. which he gives refers not to the incidence of trachoma in the population at large but to the percentage of eye cases which are trachomatous. Actually the highest incidence of trachoma in any province is 2 per cent. of the population. The same source shows that the incidence in these districts was from 25 to 55 times as high as in the neighbourhood of Bilbao, so that Mr. MacCallan's whole quotation is likely to be misleading. It is hardly realised in this country how widely different from South and South East Spain are the circumstances both as regards climate and public health in the Basque district. As to the further examination of the children, Dr. Richard Taylor (medical officer in charge of the Eastleigh camp) is replying to Mr. MacCallan's letter in the *British Medical Journal*. Briefly, each child who leaves the camp will have received a minimum of three full medical examinations. An ophthalmic surgeon with considerable experience in the diagnosis of trachoma sees all eye cases. No evidence of trachoma has been found in any instance.

We need hardly add that all those concerned are fully aware of their responsibility, and most anxious to coöperate in necessary measures to prevent the spread of any infection that may occur.

We are, Sir, yours faithfully,

RICHARD W. B. ELLIS,
London, W., May 31st. AUDREY E. RUSSELL.

GASTRIC ACIDITY AND CHRONIC ALCOHOLISM

To the Editor of THE LANCET

SIR,—Would it not be in the interest of future generations to drop the phrase "test-meal," even if, for some years more, patients must submit to the meaningless ritual of gruel or alcohol? What evidence is there that the mechanism of secretion in man differs from that in experimental animals? Gruel, if introduced into the resting stomach in the small hours of the night without awakening the subject, leads to no acid secretion. Seven per cent. alcohol under the same circumstances usually also gives a small response only. In other words the test-meal response is not a response at all but is partly the result of a basal secretion which is either continuous (pathological) or conditioned by breakfast time, and partly the result of various other conditioned reflexes.

The secretion of 100 c.cm. of gastric juice per hour is quite sufficient to give a very high curve in a rapidly emptying stomach, but it is no evidence that the patient is capable of secreting the 300 or 400 c.cm. per hour needed to deal with the buffering powers of a Christmas dinner. The possessor of a normal mucous membrane, even if he gives the lowly normal curve, can reduce a protein meal to a low *p*H in a far shorter time than the patient with chronic gastritis, who may incidentally give a hyperchlorhydric curve.

Chronic alcoholism and chronic gastritis are almost synonymous but the patients referred to in your annotation (May 29th, p. 1292) were not given a fair trial. They had probably lost the habit of secreting at breakfast time, and through their habit of drinking without food had lost the conditioned response to alcohol which better brought-up persons tend to possess.—I am, Sir, yours faithfully,

Oxford, May 30th. DENYS JENNINGS.

B.I.P.P. TREATMENT OF ACUTE OSTEOMYELITIS

To the Editor of THE LANCET

SIR,—I should like to add my testimony to that of Mr. J. H. Saint as to the great value of Bipp treatment in the prevention of necrosis after acute osteomyelitis.[1]

Fifteen years ago a boy, aged 6, was admitted to the East Suffolk Hospital with acute osteomyelitis of the left

[1] The case described here was reported in the *Clinical Journal* (1930, **59**, 90).

leg of five days' duration. He was very ill with a temperature of 105° F. and a pulse-rate of 160. The leg was greatly swollen and inflamed and acutely tender. There was no effusion on the knee- and ankle-joints. Thinking it possible that even when the periosteum was stripped from the shaft by pus and the medulla acutely infected, the actual structure of the dense bone might be still living and free from bacterial invasion, I decided to attempt complete sterilisation of the inner and outer walls of the shaft.

A tourniquet was applied above the knee. This is essential in order to keep the field of operation free from blood, and especially to avoid the danger of causing a general systemic infection by scrubbing the inflamed tissue during the operation. A long incision was made down the whole length of the diaphysis over the inner side of the tibia. The shaft was bare and bathed in pus, the periosteum being entirely stripped off. The pus was washed away and the surface of the bone and periosteum thoroughly cleansed by scrubbing with gauze, first with 1 in 20 carbolic lotion, then with spirit, and, finally, with ether. Sterile gauze was then packed between the bone and surrounding tissue, and the medullary canal laid open for its whole extent; the marrow which was infiltrated with pus was scraped away and the cavity scrubbed with carbolic lotion, spirit, and ether. The packing was then removed and a thick layer of gauze, moistened with carbolic lotion and soaked in Bipp (the excess of which was removed by squeezing), was laid between the bone and periosteum, and the medullary canal also packed with gauze soaked in Bipp. The usual dressing was then applied and the tourniquet removed.

On the next day the temperature and pulse were normal, the swelling had entirely subsided, and the leg was free from pain or tenderness. The gauze was removed on the third day. The wound healed quickly without suppuration except for a small sinus in the metaphysis at the head of the tibia which continued to discharge a little pus for several weeks; finally a very small sequestrum came away at this spot and healing was complete. Unfortunately I did not realise at that time that the primary focus of infection in these cases is in the metaphysis. Had this focus been explored and sterilised, there would no doubt have been no delay in complete recovery.

I saw the boy five years later and took a photograph and radiogram of the leg. Both legs were of exactly the same size and shape, and the radiogram showed a perfectly normal shaft, except that the bone was solid throughout, the medullary canal being filled up.

I am, Sir, yours faithfully,

Worthing, May 31st. HERBERT H. BROWN.

OBSTETRICS IN GENERAL PRACTICE

To the Editor of THE LANCET

SIR,—The general opinion certainly is that the practice of obstetrics, like the practice of surgery, should be in the hands of those who have specialised in the subject. It is also desirable that in every area there should be a medical man readily available to attend to these cases, since many require attention at a very short notice. Our consulting surgeons usually reside in the larger towns and cities; this is quite satisfactory in the case of surgery, but would not be as satisfactory in the case of obstetrics. Further, many general practitioners are excellent obstetricians, keen on the work and (what is even more important) have the complete confidence of their patients. Certain of these practitioners might be given the care of the antenatal and confinement work in their area, but it would only be fair that they should produce some evidence to the authorities of their proficiency in the art of midwifery. The Diploma of the British College of Obstetricians and Gynæcologists and the Mastery of Midwifery of the Society of Apothecaries would either of them furnish good evidence of the special knowledge; but unfortunately both these examining bodies require the candidates to have held resident appointments in hospital for at least six months before their examination. Now many quite able practitioners cannot afford to leave their practices for this length of time. Would it not be possible for some of our examining bodies to arrange an examination for a diploma in obstetrics, &c., without a compulsory resident appointment? If such an examination could be arranged in the very near future, practitioners desiring to specialise in the work would have reasonable opportunity to obtain that diploma before it is decided by the Ministry of Health to place the practice of obstetrics in the hands of experts.

I am, Sir, yours faithfully,

May 29th. SCALPEL.

METHODS OF DESTROYING BED-BUGS

To the Editor of THE LANCET

SIR,—Research on the eradication of bed-bugs is being mainly (and rightly) directed towards discovering simple methods which are 100 per cent. efficient. The "naphtha distillate" method described by Ashmore and McKenny Hughes (*Lancet*, Feb. 27th, 1937, p. 530) shows a real advance in technique, but as J. M. Holborn suggests in your issue of May 1st, there is still need for contact insecticides which can be used by the inhabitants of bug-infested houses; insecticides which are cheap and easy to apply and whose use is not too obvious to the neighbours.

Experiments show that dilute methylated spirit kills bed-bugs. A mixture of 30 parts of spirit with 70 parts of water has a low surface tension, so that it penetrates readily into the cracks which the insects inhabit. Practically every adult and nymph which the liquid touches dies; those in the cracks where the fluid remains for some time before it evaporates are all killed. Small nymphs are particularly susceptible; in fact this stage often dies if wetted with ordinary water. Eggs are more resistant than other stages, but eggs in the cracks which remain wet for an hour seldom survive.

This insecticide is very cheap, for if duty-free spirit can be used the mixture costs about sixpence a gallon. It is not inflammable (50 per cent. spirit kills eggs more readily, but is inflammable), it gives off no noxious fumes, and, most important of all, it does not damage furniture or bedding.

This method will not kill every bug in a house, but if the liquid is sprayed into the crevices few bugs will survive and the house will be made much more comfortable for the inhabitants. A second application after any eggs which escaped have hatched should leave almost none of the parasites alive. When fumigation and other methods have been perfected, this sort of treatment will not be necessary; but, until then, use should be made of any practicable means of alleviation.

I am, Sir, yours faithfully,

KENNETH MELLANBY.

The Sorby Research Laboratory, the University, Sheffield, May 27th.

KING EDWARD'S HOSPITAL FUND FOR LONDON.—A second series of coronation tours of places of interest in London is being held in aid of the Fund during June and July. Visits will be paid to the Tower of London, the Houses of Parliament, the Royal Naval College, and the National Maritime Museum at Greenwich, Somerset House, Lloyds, and Tilbury Docks. Further particulars may be had from the secretary of the Fund, 10, Old Jewry, London, E.C.2.

OBITUARY

ALFRED ADLER, M.D. Vienna

Prof. Alfred Adler, founder of the school of individual psychology, arrived in Europe from America on April 26th with a very full programme planned for him. During the first month of his visit he gave nearly 50 lectures in Holland, Belgium, and France before coming to this country, where his first public engagement was the delivery of a course of five lectures on psycho-pathology at Aberdeen, one on each day between May 24th and 28th. His last lecture on the 27th was on "The Structure of Neurosis" and was described by a member of a crowded and enthusiastic audience as one of the best Adler had ever been heard to give. Possibly the strain of his full European tour had overtaxed his energies, but he declared to a friend that he had found the work easy and was apparently in excellent spirits, delighted with his welcome in Scotland, almost to the moment of his sudden death from heart failure on May 28th.

ALFRED ADLER

[Photograph by Universal Press

Alfred Adler was born in 1870, the second son of Leopold Adler, and was educated at the Latin school and the University of Vienna, where he studied psychology and philosophy as well as medicine. He qualified in 1895 and worked in the Vienna General Hospital and Polyclinic from 1895 to 1897, when he set up as a general practitioner. He remained in Vienna for 30 years as physician and medical psychologist, and during this long period passed through many phases of intellectual and emotional experience, to become eventually the founder and leader of a school of thought which has taken hold in many countries.

Adler played a part in the recent history of psychotherapy that is not easy to assess. He was a practising physician in Vienna when he became one of the small band of supporters whom Freud drew to himself after the period of isolation that followed his first enunciation of psychoanalytical principles. Adler, however, does not seem ever to have concerned himself with the technique of psychoanalysis but rather to have formulated general principles which he was able to apply to individual cases, the chief being those of "organ inferiority," which led to the localisation of symptoms in the anatomically inferior organ, and of the "will to power," which determined neurotic behaviour with its aim of influencing the environment and reaching a satisfaction not otherwise attainable, the theory of the will to power giving to our language the much abused phrase "inferiority complex." These formulations could not be reconciled with psychoanalytical principles and after vigorous controversy Adler was invited in 1911 to leave the Viennese Psychoanalytical Society. Since then he showed himself to be a vigorous propagandist and won support and popularity both in his own country and in England, favoured by the absence from his teaching of any special emphasis upon sexual causes of the psychoneuroses and also by the avoiding of the difficult conceptions associated with the theory of the unconscious. It was characteristic of Adler and his principles that he could expound them to an audience in a single lecture and convey the feeling that in them was a complete explanation of the pathological vagaries of human behaviour. His clinical methods were akin to the explanation and persuasion of Dejerine, and his personal confidence and enthusiasm communicated itself to his patients as well as to his adherents. In this country he obtained more support from physicians and general practitioners than from professed psychotherapists, who admitted the usefulness of his approach but saw in it an over-simplification that might lead to the neglect of important mental processes outside his scheme of causes.

It was in 1912, the year after he had been asked to resign from the Viennese Psychoanalytical Society, that Adler began to be specially interested in the prevention of neurosis and delinquency in childhood, an important branch of his interests which has probably received too little attention in this country. He began educating teachers to this end, and gradually organised, with collaborators, child guidance centres in 30 schools in Vienna. It is reported by his admirers that these led to a remarkable decrease of delinquency in Vienna, until a change of educational policy resulted in their closure. His thesis was that it is the aim chosen in early childhood that decides the character of the individual. The trained individual psychologist seeks to reveal to a child what his aim really is, and to enable him to change what is often a useless and egocentric attitude—likely to lead towards a neurotic or delinquent future—to a social and coöperative attitude equally likely to lead towards a normal and successful life.

There has hardly been opportunity in this country to judge of the success of this teaching on a large scale, but some who have watched Adler demonstrating his method with a child patient—such a demonstration had been arranged for the day of his death—are deeply impressed with its success.

During the last ten years America has been the seat of Adler's activities. He was appointed lecturer in Columbia University, New York City, in 1927, and though he went back to Vienna for a spell as clinical director of the Mariahilfer Ambulatorium, he returned to the United States as visiting professor at Long Island College in 1932. He wrote freely, his most important works, which have been translated (but not always very well), being on the study of organ inferiority, the neurotic constitution, and the practice and theory of individual psychology.

One of his three daughters, Dr. Alexandra Adler, who is a research reader at Harvard, is now on her way to this country with the intention of carrying through her father's programme.

ARTHUR DOUGLAS HEATH, M.D., F.R.C.P. Lond.

Dr. Douglas Heath, who died last month at Edgbaston, was consulting physician to the skin department of the Birmingham General Hospital and dermatologist to King Edward's Schools. Born in Exeter, the son of James Pulling Heath of Southernhay, he retained throughout life his interest in the west country, and just before his death had been present at the Devonian dinner. He was educated at Exeter Grammar School and University College, London, qualifying M.B. Lond. with honours in 1892 and taking the M.D. in the following year. After holding house appointments at University College Hospital, he settled in Birmingham, first in general practice in Edgbaston, then as assistant physician to the General Hospital, and as his interest in dermatology became more pronounced taking charge of the skin department and of the venereal clinic. In 1926 he presided over the British Association of Dermatology and Syphilology, and more recently was president of the Midland Medical Society.

"With the demise of Douglas Heath," writes a friend and colleague, "the Midlands have lost their acknowledged leader in dermatology. For a quarter of a century he taught at the General Hospital and in the University of Birmingham and many hundreds of students were first initiated into this rather puzzling specialty in Heath's inimitable manner. No one could forget his description, before a class of students, of such a condition as psoriasis or dermatitis herpetiformis; in a few words the salient points were brought out in a way very different from a text-book description. The Birmingham medical school has lost a great teacher and a delightful personality."

Dr. Heath married Annie, daughter of the Rev. Henry Taylor of Wells, Somerset, and he leaves a widow with one son and one daughter.

EDWARD CARMICHAEL, M.D., F.R.C.P. Edin.

Dr. Carmichael, who died on May 28th, at Bournemouth, where he was living in retirement, graduated at Edinburgh in 1884 and took the gold medal at the M.D. two years later when he was Syme surgical fellow. After being resident surgeon at the Edinburgh Royal Infirmary and tutor in clinical surgery at the University, he went into private practice in the city and became visiting medical officer to the City Poor House at Craiglockhart. His successor writes of him: "With the passing of Edward Carmichael Edinburgh has lost one of her well-known and greatly beloved physicians. For long years he faithfully guided and ministered to the members of a large general practice. He was a man wholly wrapped up in his work, ever ready for service both in bodily ailments and family distress. Nevertheless he found time to keep himself conversant with the advance of medicine, and those who worked with him will ever be grateful for his help and the knowledge gained through his great experience. Although he retired some years ago his old patients still talk and think of him as 'Edward the Beloved.' He was the ideal family doctor and friend." His son, Dr. E. Arnold Carmichael, is director of the neurological research unit at the National Hospital, Queen-square.

EMILY FRANCES CAMPBELL, L.R.C.P. Edin.

WE regret to announce the death on May 20th of Lady Campbell, widow of Sir John Campbell, the distinguished Belfast surgeon. Lady Campbell was daughter of the Rev. William Chestnut, of Tralee, Co. Kerry, and received her early education at the Victoria College, Belfast. She was first married to Dr. Fitzsimons, a medical missionary, with whom she worked abroad for some years. After his death she decided to return to Belfast and study medicine. She took her degrees at Edinburgh and afterwards engaged in private practice in Belfast, on the Antrim-road until her marriage to Sir John Campbell some three years later. During his lifetime Lady Campbell identified herself closely with her husband's work, acting as his anæsthetist and taking a deep interest in the welfare of the Samaritan and other Belfast hospitals. Of attractive personality she was everywhere respected for her kindly and gentle disposition. She is survived by two sons, the elder, Robert, a graduate in agriculture of Cambridge University, the younger, William Stewart, a recent graduate in medicine of Queen's University, and a demonstrator in the Belfast Medical School.

DR. GEORGE HAMILTON WINCH, who has died at Penarth, at the age of 58 years, was for sixteen years specialist officer in the treatment of venereal diseases under the Glamorgan County Council. He qualified M.B. Edin. in 1904, taking honours in anatomy and surgery, was then house physician and pathologist at the City of London Hospital and later assistant medical officer of Oxford County Asylum. During the late war he was bacteriologist to the Northern Command with the rank of Captain R.A.M.C. He is survived by his widow and two daughters.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 22ND, 1937

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 1525; diphtheria, 850; enteric fever, 26; pneumonia (primary or influenzal), 787; puerperal fever, 32; puerperal pyrexia, 114; cerebro-spinal fever, 23; acute poliomyelitis, 3; acute polio-encephalitis, 2; encephalitis lethargica, 5; dysentery, 14; ophthalmia neonatorum, 116. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on May 28th was 2948 which included: Scarlet fever, 748; diphtheria, 841; measles, 68; whooping-cough, 494; puerperal fever, 22 mothers (plus 15 babies); encephalitis lethargica, 282; poliomyelitis, 1. At St. Margaret's Hospital there were 22 babies (plus 16 mothers) with ophthalmia neonatorum.

Deaths.—In 123 great towns, including London, there was no death from small-pox, 1 (1) from enteric fever, 16 (1) from measles, 1 (0) from scarlet fever, 14 (4) from whooping-cough, 20 (5) from diphtheria, 47 (9) from diarrhœa and enteritis under two years, and 34 (1) from influenza. The figures in parentheses are those for London itself.

Hull reported 3 deaths from measles, Middlesbrough and Birmingham each 2. There were 7 fatal cases of diarrhœa at Liverpool, 4 at Birmingham, 3 at Nottingham.

The number of stillbirths notified during the week was 275 (corresponding to a rate of 40 per 1000 total births), including 43 in London.

NEW HEALTH CENTRE AT ISLEWORTH.—Sir George Newman has opened a health centre at Busch-corner, Isleworth. There is a large central hall for lectures and demonstrations capable of division into separate waiting-rooms and a dental wing, arranged as an independent unit. The building cost £7619.

PARLIAMENTARY INTELLIGENCE

FACTORIES BILL: COMMITTEE STAGE CONCLUDED

THE Factories Bill was further considered by a standing committee of the House of Commons on May 25th and 27th.

INTERPRETATION OF "FACTORY"

On Clause 144 Mr. SHORT moved an amendment to provide that premises where switching operations were performed should be brought within the Bill. In 1935 there were 47 accidents in stations above 650 volts and 92 accidents in stations below 650 volts.—Mr. GEOFFREY LLOYD said the Electricity Commissioners had a statutory responsibility for securing the safety of the public, and they were advised that that included their employees. But the Home Office would take up the matter again with the commissioners.—On this understanding the amendment was withdrawn.

DEFINITION OF "YOUNG PERSON"

On Clause 145 Sir J. SIMON, Home Secretary, secured amendments to make the definition of "young person" read: "A person who has attained the age of 14 and has not attained the age of 18, but does not include any person whose parent is required under, or by virtue of the Education Acts, 1921 to 1937, to cause him (unless there is some reasonable excuse) to attend school or to attend an alternative course within the meaning of the Education Act, 1936." No one ever intended that young persons who were required to be kept at school should be available for factory work, and it was better to say so in the Bill in proper terms.

On Clause 148 Mr. T. M. COOPER, Lord Advocate, secured a similar amendment for Scotland and another making it unnecessary to hold an inquiry under the Fatal Accidents Inquiry (Scotland) Act of 1895 in any case where the Home Secretary had already held an inquiry.

WORKING HOURS FOR YOUNG PERSONS EMPLOYED IN FACTORIES

Sir J. SIMON moved the following new clause:—

(1) Subject to the provisions of this section, as from the expiration of a period of two years after the commencement of this Act, the foregoing provision of this Part of this Act limiting the hours worked in any week, exclusive of intervals allowed for meals and rest, shall have effect, in the case of young persons who have not attained the age of sixteen, as if for the reference to forty-eight hours there were substituted a reference to forty-four hours.

(2) If representations are made to the Secretary of State with respect to any class or description of factory—

(*a*) that the industry carried on in that class or description of factory is, either generally or as respects a particular process, so dependent on the employment of such young persons and so organised that the carrying on of the industry would be seriously prejudiced unless the number of hours worked in a week by such young persons employed in that industry or in that process were permitted to exceed forty-four;

(*b*) that such increased hours would not be likely to be injurious to the health of the young persons; and

(*c*) that the work in which the young persons would be employed in that industry or process is particularly suitable for young persons, and that their employment would familiarise them with, and help to train them for employment in, processes in which older persons are employed in the industry, and be likely to lead to their permanent employment in the industry;

the Secretary of State may direct an inquiry to be held, and if, as a result of the inquiry, he is satisfied with respect to all the matters aforesaid, he may make regulations increasing the total hours, exclusive of intervals allowed for meals and rest, that may be worked by such young persons in any week in that class or description of factory, or, as the case may be, in a particular process carried on therein, to such figure, not exceeding forty-eight, as may be specified in the regulations.

The committee were, he thought, all of one mind in wanting to devise some plan which would not leave 48 hours for young persons under 16 as the permanent provision of the Bill. This new clause had been brought forward to fulfil, as far as possible, that object. But if they were to make a reduction it could not be done merely by a stroke of the pen. There must be a suitable interval provided and the new clause provided that the interval should be a period of two years from the commencement of the Act. The new clause was the result of very careful inquiry in which the Home Office had had the help of trade-union leaders and employers' representatives.

Viscountess ASTOR said she was astonished that the Government at this time of day proposed to allow children under 16 to work 44 hours a week in factories.—Sir E. GRAHAM-LITTLE said he was certain that if the committee pressed for a 40-hour limit it would carry public opinion with it.—Mr. LLOYD replied that in this matter they had to secure a practical compromise between what should be done for the children and what were the needs of industry. The absence of juveniles might very seriously affect the output, and it might be the wages, of the adult workers.—Mr. RHYS DAVIES secured an amendment to make the interval after the passing of the Act before the clause came into operation one instead of two years, but his further amendment to reduce the number of hours work per week for juveniles in factories from 44 to 40 was negatived by 26 votes to 16.

Mr. LLOYD moved that a young person who works in a factory, whether for wages or not, in collecting, carrying, or delivering goods, carrying messages, or running errands shall be deemed to be employed in the factory for the purposes of this Act: provided that the provisions of Part VI shall not apply, except as expressly provided, to any such young person who is employed mainly outside the factory. This was agreed to.

WORKING HOURS FOR YOUNG PERSONS EMPLOYED OUTSIDE FACTORIES

Mr. LLOYD moved a new clause defining the conditions of employment of young persons employed in the business of a factory wholly or mainly outside the factory.

(*a*) The total hours worked, exclusive of intervals allowed for meals and rest, shall, subject to the provisions hereinafter contained relating to overtime, not exceed forty-eight in any week.

(*b*) The young person shall not be employed continuously for a spell of more than five hours without an interval of at least half an hour for a meal or rest, and where the hours of employment include the hours from half-past eleven in the morning to half-past two in the afternoon, an interval of not less than three-quarters of an hour shall be allowed between these hours for dinner.

(*c*) On at least one week-day in each week the young person shall not be employed after 1.30 P.M.

(*d*) The young person, if he has attained the age of sixteen, may, on occasions of seasonal or other special pressure or in cases of emergency, work overtime, that is to say, in excess of the permitted weekly hours, but his hours of overtime work shall not exceed six in any week or fifty in any calendar year, and where any employer has employed overtime any young persons to whom this section applies in twelve weeks (whether consecutive or not) in any calendar year, neither he nor any person succeeding to his business shall employ young persons to whom this section applies overtime during the remainder of that year.

(*e*) The young person shall in every period of twenty-four hours between mid-day on one day and mid-day on the next day be allowed an interval of at least eleven

consecutive hours which shall include the hours from 10 o'clock in the evening until 6 o'clock in the morning.

Sir E. GRAHAM-LITTLE protested against the five hours' continuous spell provided in Sub-section (*b*) and the 13 hours in Sub-section (*c*) which he said he considered to be too long.—Viscountess ASTOR concurred.

WORK BEFORE AND AFTER CONFINEMENT

Mr. GRAHAM WHITE moved the following new clause :—

Any woman or young person employed in a factory shall be entitled, on the production of a medical certificate stating that her confinement will probably take place within six weeks, to leave her work, and she shall not be permitted to work during the six weeks following her confinement.

Any woman or young person who shall have left her work under the provisions of this section shall be entitled to be re-employed at the end of the period of rest.

He would like, he said, this country to come into line with the legislation and practice of foreign countries.

Sir E. GRAHAM-LITTLE said that he hoped the Committee would not accept the new clause. Any hard and fast rules for the treatment of confinements before and after delivery were entirely unscientific. Every case should be judged on its merits. The whole question was dealt with in a more sensible way in the munition factories during the late war when graded work was found for women during the pregnancy period.

Viscountess ASTOR said the new clause, if adopted, would do a great disservice to women. From the point of view of the State it would be very wise on the part of the Government to say that a woman could apply for exemption a month, say, before the child's birth as well as a month afterwards, provided she had full maternity benefit. Sooner or later we must do something to protect women who went into industry so that they should have full time for child-bearing.

Mr. RHYS DAVIES agreed with Lady Astor. Maternity benefit had not had the effect people imagined it would. The women complained that most of the money did not go to them to buy food and clothing but to the people in the professions who worked on them. He was satisfied that women in industry who bore children ought to receive very much more consideration from the community than they did.

Mr. R. S. HUDSON, Parliamentary Secretary to the Ministry of Health, asked the Committee not to accept the clause for several reasons. It was a clause appropriate not to a Factories Bill but to a Public Health Bill. Secondly, it attempted to put into force part of a provision included in the draft Washington Convention. Actually this was made dependent on the provision that when a woman left work in these circumstances she was to receive full and adequate maintenance. He agreed with Lady Astor that without the provisions of the Washington Convention this clause would do much more harm than good. At present any woman who could get a doctor's certificate to say that she was incapable of work was entitled to sign off and receive benefit for four weeks before the confinement, and no employer was allowed knowingly to employ a woman within a certain period after the date of confinement.

The clause was negatived without a division.

PROVISION FOR NURSING MOTHERS

Mr. GRAHAM WHITE moved another new clause :—

A woman or young person employed in a factory who is nursing her child shall be allowed half an hour twice a day for this purpose, and time so allowed shall be included in the calculation of the total hours worked.

Mr. HUDSON said he was afraid that he would again have to ask the Committee not to accept this clause, because it was not in any way complete. In order to be effective it would also have to include provisions for insisting that factories should provide nurseries, or rooms where the mother could nurse her children, and some arrangement for bringing the children from the home to the factory. They were informed by their scientific advisers that in these times of a much shorter working day provisions of this nature were unnecessary, that it was sufficient in normal conditions for a woman to nurse her baby before she left for the factory and immediately after she got home, and that provision for one artificial meal for a child in the middle of the working period was a much better arrangement than either expecting the woman to go back home to nurse the child or arranging for the child to be brought to the factory.

The clause was negatived without a division.

YOUNG PERSONS AND DANGEROUS MACHINES

Colonel SANDEMAN ALLEN moved a new clause dealing with the training and supervision of young persons working at dangerous machines. He said that he was not satisfied that in the case of young persons there was at present sufficient supervision or that the powers of the Home Secretary were altogether adequate. The figures for accidents to young persons had increased in the most alarming way.—Mr. LLOYD said that the Government were prepared to accept the clause.

The Committee stage being concluded, the Bill, as amended, was ordered to be reported to the House.

NOTES ON CURRENT TOPICS

Eradication of Animal Diseases

IN the House of Commons on May 27th Mr. W. S. MORRISON, Minister of Agriculture, made a statement on agricultural policy, in the course of which he said that the Government proposed to initiate a large-scale and more comprehensive campaign for the eradication of animal diseases in Great Britain. Their object was to improve the health of livestock and increase agricultural productivity by seeking to eliminate what was perhaps the worst of all forms of wastage and economic loss in agriculture. In the first instance, efforts would mainly be directed to the eradication of diseases among cattle. The scheme would involve an additional charge on the Exchequer of about £600,000 per annum for the first four years. It would, however, involve centralisation of public veterinary services and as against the increased cost to the Exchequer, the expenditure by local authorities would be reduced by about £170,000. Parliamentary authority would be required for these proposals. The Government were anxious, however, to lose no time in developing the existing schemes of control of disease and accordingly he was arranging at once to amend the Attested Herds Scheme under the Milk Act, 1934, by providing additional assistance in England and Wales, as had already been done in Scotland, to owners of dairy stock who were desirous of eradicating tuberculosis from their herds. This revised scheme would become operative on June 1st next. In the opinion of the Government the proposals which he had outlined by increasing the productivity of our agriculture, not only would enable it better to meet the situation in the event of war, but would be a substantial aid towards raising efficiency, lowering costs and establishing the industry on a sounder economic foundation in time of peace. The necessary legislation to give effect to these proposals would be introduced at the earliest possible moment.

Trade Marks and Proprietary Preparations

In the House of Commons on May 27th Dr. BURGIN (then Parliamentary Secretary to the Board of Trade) moved the second reading of the Trade Marks (Amendment) Bill, which has already passed through the House of Lords. He said that the Bill, generally speaking, implemented the report of the Departmental Committee which had reviewed the law

relating to trade marks. Clause 4, which was the main clause of the Bill, dealt with words used as the name or description of an article, and would be of assistance to owners of well-known trade marks.

Mr. A. V. ALEXANDER, in moving the rejection of the Bill, said that under the measure, if it was not amended, trade mark infringement would occur if any one made any reference to other goods which they were selling under a mark. For example, it would be impossible to sell a medicine as "similar to," although in effect the two productions might be identically made of common substance in which there was no special virtue. The only virtue was in the use of the adopted trade mark which might perhaps lead to an exploitation of the public in price which was absolutely indefensible.

Mr. BARNES said that in many cases owners of proprietary preparations were taking advantage of the present legal protection to practise frauds on the public in the claims they made regarding the curative powers of their preparations, and the prices they charged for them. Safeguards, which were very essential for the protection of the public at large, ought to be inserted in the Bill, and obligations imposed on the owners of proprietary preparations which would prevent them from exploiting the public. There ought not to be, as a result of the Bill, further restrictions in the realm of proprietary goods.

Mr. BROAD expressed the fear that some of the provisions of the Bill would have the effect of enabling people to build up a little preserve or monopoly. He had a case in mind. Some chemical firms were selling a new and very valuable kind of disinfectant, for use as a gargle, and so on. It was called "Thymol" and to make it ready for use, it was compounded in some way with glycerine. Prescriptions were given by doctors, to be taken to the chemist, for this "glycerine of thymol." It became more generally used, and then a very big American firm put up the stuff as a standard article, and called it "glyco-thymoline." Other firms began to do the same thing, calling it "glycerinated thymol," or "glycerine of thymol." Since "glycerine of thymol" or "glycerinated thymol" sounded very like "glyco-thymoline," it might be said that one could never sell glycerine in combination with thymol because of the trade mark "glyco-thymoline." He was afraid of the creation of monopolies in that way.

Dr. BURGIN, replying to the debate, said defensive trade marks were limited to invented words. There would, therefore, never be any prohibition on members of the public using simple language and descriptions of articles by their proper names. If Clause 15 could really be thought to extend to the verbal boost by a salesman that a certain thing was in his opinion as good as, or equivalent to, aspirin then that was nonsense. If it was necessary to delete or insert words to prevent that impression gaining ground, it could be done in committee. There was a whole series of things in regard to which a manufacturer ought to be able to attach conditions, such as the packing, stoppering, &c., of his goods. The idea was that the manufacturer, when an article left his factory in a particular state, should, if the customer required it in a particular state, be entitled to say that it should reach the customer in that state.

The motion for the rejection was withdrawn, and the Bill was read a second time.

In the House of Lords on May 25th the Widows', Orphans', and Old Age Contributory Pensions (Voluntary Contributors) Bill was read a second time.

The Children and Young Persons (Scotland) Bill was read the third time and passed.

In the House of Commons on May 27th, the Public Health (Drainage of Trade Premises) Bill, which has already passed through the House of Lords, was read a second time.

In the House of Commons on May 28th the Marriage Bill was read the third time by 190 votes to 37.

QUESTION TIME

WEDNESDAY, MAY 26TH

Approved Societies

Mr. PARKER asked the Minister of Health whether, in view of the differing practices of various approved societies in the administration of the National Health Insurance Act, he was prepared to secure the introduction of a uniform system under which the rights of insured persons to benefit were more clearly defined.—Mr. HUDSON, Parliamentary Secretary to the Ministry of Health, replied: My right hon. friend has no reason to think that under the system of administration of national health insurance through approved societies insured persons are not aware of their rights to the benefits provided by the Act, and, as every insured person has a right of appeal if he is dissatisfied with the decision of his society on a claim for benefit, my right hon. friend does not consider that any such fundamental change as is suggested by the hon. Member is either necessary or desirable.

Mr. RHYS DAVIES asked the Minister of Health in connexion with the freedom of choice of approved society the approximate total membership of the few approved societies which had agreed not to accept applications for transfer from members of certain other societies, the group of societies to which they mainly belonged and the approximate percentage such membership bore to the total membership of approved societies.—Sir KINGSLEY WOOD replied: Approved societies entering into arrangements of the kind referred to by the hon. Member are not required to notify such arrangements to my department, and do not in fact do so. I am not therefore in possession of the information asked for in the question.

THURSDAY, MAY 27TH

Survey of Working-class Budgets

Mr. TOM SMITH asked the Minister of Labour whether the inquiry into the question of the revision of the cost-of-living index figure was yet completed; and, if so, what action he proposed to take.—Mr. ERNEST BROWN replied: The methods to be adopted in obtaining the data required for a revision of the basis of the cost-of-living index figures have for some time been under consideration by my department, in consultation with an advisory committee appointed for this purpose. The committee have recommended that budgets should be collected giving details of the expenditure of a representative sample of some thousands of working-class families in each of four weeks at quarterly intervals, beginning in the autumn of this year, and the necessary preparations for the collection of these budgets are now being made.

Tuberculosis in Wales

Mr. JAMES GRIFFITHS asked the Minister of Health, having regard to the high mortality-rate from tuberculosis in Wales, what steps he proposed to take to deal with the problem; in particular, what progress was being made with proposals for rural rehousing; and whether these plans could be expedited in view of the gravity of the problem.—Sir KINGSLEY WOOD replied: Although the rate of mortality from tuberculosis in Wales is higher than in England and Wales as a whole, I may remind the hon. Member that there has been a substantial decline in the rate in Wales as well as in the rest of the country, this decline amounting to 38 per cent. on the figures for 1935 as compared with 1910. In Wales, the arrangements for the treatment of tuberculosis are made by the Welsh National Memorial Association on behalf of the Welsh County and County Borough Councils, and a survey of the services provided by the Association is at present being undertaken by one of the Medical Officers of the Welsh Board of Health. I am awaiting the results of this survey before considering what further measures are required. As regards the second part of the question, the position is that 4300 houses are included in the slum clearance programmes of the Welsh rural authorities and that 1339 replacement houses have been approved, of which over 700 have been completed. A further 386 houses have been approved for the abatement of overcrowding and for general needs. My department is continually

watching the progress of the clearance programme with a view to expediting it where possible.

Committee on Corporal Punishment

Mr. MUFF asked the Home Secretary whether he was now in a position to announce the constitution of the committee on corporal punishment.—Sir J. SIMON replied: At the suggestion of my right hon. friend, the Secretary of State for Scotland, it has been decided that the committee shall inquire not only into the English but also into the Scottish law and practice. The committee's terms of reference will be: "To consider the question of corporal punishment in the penal systems of England and Wales and of Scotland; to review the law and practice relating to the use of this method of punishment by Juvenile Courts, by other courts, and as a penalty for certain offences committed by prisoners; and to report what changes are necessary or desirable." As already announced, the Hon. Edward Cadogan has consented to act as chairman of the committee. The following ladies and gentlemen have now accepted invitations to serve on it: The Lady Ampthill, C.I., G.B.E.; Mrs. A. E. Astley; Prof. J. E. Brierly, O.B.E., J.P.; Mr. E. Ford Duncannon, D.S.C., M.A., J.P.; Dr. Robert Hutchison; Sir William McKechnie, K.B.E., C.B.; Mr. H. R. Tutt; and Mr. Cecil Whiteley, K.C. My right hon. friend and I contemplate adding one other woman member, whose name will be announced as soon as possible.

Duke-Fingard Treatment of Respiratory Disease

Mr. ROWSON asked the Minister of Health if he would set up a committee of inquiry, consisting of an equal number of medical men and laymen, to inquire into the efficacy and genuineness of the Duke-Fingard inhalation treatment for diseases of the respiratory organs, such as chronic catarrh, bronchitis, bronchiectasis, asthma, and tuberculosis; and if he would take steps to have this treatment made available for panel patients under the Health Insurance Acts who were suffering from chest complaints.—Sir KINGSLEY WOOD replied: No, Sir. I am not aware of any sufficient reason for instituting a special inquiry into this treatment. As regards the second part of the question, an insurance practitioner is free to give such treatment as in his judgment is appropriate for his patients.

Watered Milk

Mr. DAVID ADAMS asked the Minister of Health whether he had now decided to take further steps to protect the public against watered milk, in view of the failures in recent prosecutions in cases of proved watering to obtain convictions before the magistrates.—Sir KINGSLEY WOOD replied: I have considered this matter again in the light of the recent prosecutions to which the hon. Member drew my attention. I understand that there was conflicting evidence in these cases, and that the magistrates in their discretion decided not to convict. In these circumstances, I do not as at present advised propose to introduce any fresh legislation on this subject.

Admission of Foreign Doctors and Dentists

Mr. ROSTRON DUCKWORTH asked the Home Secretary what was the present policy of his department with regard to the admission into this country of foreign doctors, dentists, research workers, and students; whether he could give the aggregate number permitted to settle here in the last two years; and what representations he had received from professional bodies in this country on the subject of this form of competition.—Mr. GEOFFREY LLOYD, Under-Secretary, Home Office, replied: The policy is to restrict closely the admission of foreign doctors and dentists who wish to set up in practice in this country after being admitted to the British Medical and Dentists Registers. Since March, 1935, the rule has been not to permit foreigners to engage in medical practice in the United Kingdom save in the most exceptional circumstances; the same rule has been applied in the case of foreign dentists since February, 1936. No general figures of the numbers to whom permission to practise has been granted are available. The question of the admission of refugee doctors and dentists from Germany has been the subject of representations from and discussion with the various professional bodies concerned and separate figures have been kept of the numbers of refugee doctors and dentists to whom permission to set up in practice has been granted. They are 183 doctors and 78 dentists, of whom the large majority, in the case of the doctors, had either been granted permission to practise or had commenced their studies for a British degree before March, 1935, and in the case of the dentists had been admitted to the Dentists Register before February, 1936. As regards research workers and students whose work does not involve employment in the service of a person or firm in this country, no obstacles are placed in the way of their admission provided their maintenance here is assured, but they are expected to leave on the completion of their research or study. If employment is involved they are not admitted unless in possession of a permit issued by the Minister of Labour to their prospective employer in accordance with Article 1 (3) (*b*) of the Aliens Order, 1920.

MONDAY, MAY 31ST

Spanish Refugee Children and Public Assistance

Mr. MESSER asked the Minister of Health if he was prepared to sanction public assistance committees providing accommodation for Spanish refugee children in homes or institutions at public expense.—Mr. BERNAYS, Parliamentary Secretary to the Ministry of Health, replied: As financial responsibility for the Spanish refugee children has been undertaken by a number of voluntary bodies, my right hon. friend is not prepared to sanction expenditure on their maintenance by local authorities from public funds.

Ventilation of Telephone Kiosks

Sir MURRAY SUETER asked the Postmaster-General whether any recent experiments had been conducted in connexion with ventilating public telephone kiosks in constant use; and whether some simple ventilation contrivance could be devised and, if satisfactory, adopted, in the interests of public comfort and health, in positions where a 100 per cent. noise-proof telephone kiosk was not necessary.—Major TRYON replied: If the question refers to kiosks in the open, of which practically all are necessarily on or near the highway, my information is that the noise problem is far more important than that of ventilation. If, however, the question refers to cabinets indoors, I can assure my hon. and gallant friend that the question of improvement in ventilation is being actively pursued.

Compensation for Silicosis

Mr. JAMES GRIFFITHS asked the Home Secretary if he was aware that the South Wales Coalowners Indemnity Society were refusing to pay compensation to men certified by the medical board to be disabled by silicosis; that the reason given for this refusal was that the society proposed to institute proceedings for the purpose of seeking a declaration that the silicosis orders issued by him were ultra vires; and that meantime these men were compelled to seek public assistance; and what action he proposed to take in the matter.—Sir SAMUEL HOARE replied: I have no information to the effect suggested in the question. I should be prepared to consider any fuller particulars which the hon. Member may send me, but I have, of course, no power to interfere with any legal proceedings.

Mr. GRIFFITHS asked if Sir Samuel Hoare did not consider it deplorable that employers should try to take advantage of some possible technical flaw to deprive men suffering from this disease of compensation; and if he would give an assurance, if the courts held that this order was ultra vires, that these men would not be penalised but that the Government would bring in a new order to give them the compensation to which they were entitled?

Sir SAMUEL HOARE said he agreed that this was a matter of great importance, but he would rather not express an opinion until he had further facts.

ROYAL SOCIETY OF ARTS.—The Albert medal of this society for 1937 has been awarded to Lord Nuffield for "services to industry, transport, and medical science."

PUBLIC HEALTH

The Bournemouth Outbreak of Enteric Fever

THE official report on the outbreak of enteric fever in Bournemouth, Poole, and Christchurch last summer has now appeared,[1] and proves to be well worth waiting for. In his explicit prefatory note Sir Arthur MacNalty refers to the certainty that raw milk was the vehicle of infection and to the strong probability that the retailer's bulk supply was infected by a relatively small contribution, itself produced without apparent fault. How the milk became infected is not actually proved, but the late Dr. Vernon Shaw, who compiled the report now published, gives sound reasons for assuming a connexion between this outbreak and a particular "carrier." The sequence of events was as follows:

On August 21st the Ministry of Health received a telegram from the medical officer of health for Poole who reported a notification of a case of enteric fever, stated that he had reason to believe others might occur and asked for assistance. An hour later a telegram was received from the deputy medical officer of health for Bournemouth reporting some cases of "suspected food poisoning enteric type," and also asking for assistance.

Dr. Shaw was sent to investigate and on August 22nd was informed that 30 cases of enteric fever had been notified during the preceding 24 hours, and that a very large number of other potential victims were under observation. The patients were scattered throughout the three towns, without distinction of age, sex, occupation, or social status. Dr. Shaw ascertained that the only factor common to all the patients was the consumption of raw milk retailed by one distributor. This distributor, acting on Dr. Shaw's advice, adopted a method of commercial pasteurisation (heating the milk to 160° F.) for the whole of his supply, and distributed no unpasteurised milk after the morning round on August 22nd. It was correctly anticipated that this would prevent any further infection direct from the milk-supply; and that therefore no notification of a *primary* case of enteric fever would be received after the expiration of the incubation period [2] calculated from August 22nd *plus* a week or ten days during which a doctor might not be called in. Some of the alleged late cases were in fact relapses in patients who had failed to call in a doctor in the critical illness. So far as is known only four secondary cases occurred. Dr. Shaw concluded that the milk had been infective for a period of about 31 days preceding August 22nd. The total number of known cases finally amounted to 718 (518 residents and 200 visitors). The deaths of residents numbered 51.

No source of infection could be discovered amongst the distributors or retailers. At the 37 scattered farms from which the milk was collected, 192 persons were examined, and at one farm 2, the wife and son, aged 12, of the farmer, were found to have enteric fever. Dr. Shaw came to the conclusion that neither was the cause of the outbreak, but that the milk produced at the farm was the source of infection of the retailer's supply and of the farmer's wife.

In the adjoining house a fatal case of enteric fever had occurred in May, 1934, when the water-supply of both houses—common to eight other houses in the vicinity—was suspect. It was derived from a well 162 feet deep, situated 100 yards from a small stream which ran within a few yards of the two houses. Repeated examination of the well water proved that it was liable to pollution, although at times it yielded a good potable water. At a point about half a mile up stream from the farm the sewage effluent from a house was found to be discharging into the stream. Bacteriological examination of the effluent proved negative for *B. typhosus* in September and early October (4 tests), but the organism was present in large numbers late in October (2 tests). An occupant of the house during the material periods was found to be excreting typhoid bacilli in his fæces; he complied at once with the suggestions made to eliminate any further contamination of the stream.

Dr. Shaw was satisfied that the outbreak was due to the consumption of raw milk, contributions to the supply having been infected by the contaminated water of the stream. How the infection was conveyed from the stream to the milk, whether by the use of the water of a certain well or by the cows subsequent to their drinking at the stream, was not determined. The suggestion that a cow may excrete typhoid organisms in her dung or even in her milk is apparently a novel one which Dr. Shaw found himself unable to reject.

Sir Arthur MacNalty, from the results of the inquiry, draws the inevitable conclusion that "in the present state of our knowledge, where large milk supplies and commensurate risk are involved, the only practicable way to reduce the risk of such outbreaks to a minimum is by pasteurisation."

[1] Report on an Outbreak of Enteric Fever in the County Borough of Bournemouth and in the Boroughs of Poole and Christchurch. By W. Vernon Shaw, O.B.E., M.D. *Rep. publ. Hlth med. Subj. Lond.* No. 81. 1937. London: H.M. Stationery Office. Pp. 25. 9*d*.

[2] For purposes of this inquiry an incubation period of 14 days was assumed. Dr. Shaw observes that most authorities put it at 12–14 days; that it probably varies with the dose of the infecting organisms, but the limits rarely lie outside 7–17 days.

IRELAND

(FROM OUR OWN CORRESPONDENT)

THE NATIONAL HOSPITALS ASSOCIATION: A SET-BACK

A LITTLE over twelve months ago a movement was begun to form an Association of Hospitals in Ireland on lines similar to the associations which exist in Great Britain, the United States of America, and other countries. Its functions were to be consultative, advisory, and educative. Some fifty hospital authorities expressed interest in the proposal. They included the governing bodies of nearly all the voluntary hospitals and a large proportion of the local authorities which have the control of hospitals. A preliminary meeting of representatives was held just a year ago and a provisional committee was appointed to draft a constitution. This task had been carried out and a meeting was about to be called to consider the draft scheme, when it was discovered that the local authorities controlling the rate-supported hospitals had no power to contribute toward the expenses of such an association. A deputation waited on the Minister for Local Government and Public Health, who explained that he had no power to sanction any such payment by the local authorities. An appeal has been made to him that he should, at the earliest opportunity, introduce legislation to legalise such payment. As a dissolution of the Dáil is to take place within the next few weeks immediate legislation cannot be expected, and the provisional committee of the Association has had no option but to advise that consideration of the

draft constitution be postponed until legislation has been carried. The voluntary hospitals could not, by themselves, bear the financial burden of a hospitals association, and the project cannot be pursued unless the local authorities are given power to join. It is pointed out that the first public suggestion for the formation of a hospitals association came from the Hospitals Commission, the body appointed by the Minister to advise him how best to apply sweepstake funds to the development of the hospital system of the Irish Free State. In the report of the Commission published early last year, comment having been made on the lack of, and need for, coöperation between the hospitals, the formation of a hospitals association was advised. It is further pointed out that there are many precedents for permitting local authorities to pay the expenses of delegates sent to various congresses and conferences—health and engineering, for example, and that one important organisation in Ireland—the General Council of County Councils—is supported by the subscriptions of the several county councils as members. Have the payments in these cases been irregular? If so, it is high time they were regularised, and such developments as a hospitals association made possible.

THE TWENTY-FIRST HOSPITAL SWEEPSTAKE

The draw of the twenty-first of the Irish Hospital Sweepstakes was held last week. As a rule the receipts for the sweepstakes on the Derby are smaller than those for the two other sweepstakes of the year, because the period of preparation is briefer. On this occasion, to the surprise of everyone, the receipts showed a slight advance on those for the Grand National, the draw for which was only two months before. In opening the draw Lord Powerscourt, chairman of the Associated Hospitals Committee, was able to announce that the total proceeds to the hospital funds up to the present amounted to £11,118,859. Three county hospitals, eight district hospitals, and three fever hospitals had already been completed out of these funds, and nineteen other hospitals were in course of construction. He had recently received from the Minister a most encouraging and satisfactory assurance as to the prospects of his scheme of hospitalisation.

MEDICAL NEWS

University of Cambridge

On May 28th the following degrees were conferred:

M.D.—J. B. Harman.
M.B., B.Chir.—J. W. Crofton, J. W. Hannay, T. E. S. Lloyd, W. J. E. Phillips, and G. F. Wright.
M.B.—*F. R. Berridge, K. O. Black, F. G. Booker, *F. Braithwaite, T. C. Gipson, A. C. L. Houlton, A. R. Kelsall, C. R. McLaughlin, L. J. Panting, T. L. H. Shore, R. H. A. Swain, W. F. Walton, and J. Woodrow.
B.Chir.—*T. M. Daniel.

* By proxy.

University of Oxford

In future any student who has successfully completed the first three years of a medical course at any university approved by the hebdomadal council may be admitted to the status and privileges of a senior student of the University of Oxford.

It is hoped to make an election at the end of this term to a William Hulme lectureship in physiology at Brasenose College, which will have an initial stipend of £350 a year. It will be tenable for three years and may be renewed for a further two years. Applications should be sent to the principal of Brasenose College before June 26th.

University of Glasgow

On Wednesday, June 9th, at 4.15 P.M., Prof. Ferdinand Sauerbruch, director of the University Surgical Clinic at Berlin, will deliver the fourth Macewen memorial lecture at the university. He will speak on advances in modern surgery and there will be a demonstration by cinematograph on the artificial hand which can be moved at will.

Society of Apothecaries of London

At recent examinations the following candidates were successful:

Surgery.—J. R. Audy, Guy's Hosp.; A. W. Box, Univ. of Camb. and Guy's Hosp.; J. W. P. Morgan, St. Mary's Hosp.; and W. G. Zorab, Guy's Hosp.
Medicine.—A. Bagon, Univ. of Manch.; P. A. Gardiner, Guy's Hosp.; E. de C. Kite, Univ. of Glasg.; B. A. R. Pitt, Guy's Hosp.; and R. H. S. Thompson, Univ. of Oxford and Guy's Hosp.
Forensic Medicine.—A. Bagon, Univ. of Manch.; P. A. Gardiner, Guy's Hosp.; E. de C. Kite, Univ. of Glasg.; B. A. R. Pitt, Guy's Hosp.; and R. H. S. Thompson, Univ. of Oxford and Guy's Hosp.
Midwifery.—F. Bastawros, Royal Colleges, Edin.; A. W. Box, Univ. of Camb. and Guy's Hosp.; J. D. B. Perkins, Guy's Hosp.; G. L. Young, Univ. of Camb. and St. Bart.'s Hosp.; and W. E. Young, Univ. of Oxford and Guy's Hosp.

The following candidates, having completed the final examination, are granted the diploma of the Society entitling them to practise medicine, surgery, and midwifery: A. Bagon, P. A. Gardiner, B. A. R. Pitt, R. H. S. Thompson, and W. G. Zorab.

University of London

On May 19th the degree of Ph.D. in medical vital statistics (non-clinical) was awarded to Ernest Lewis-Faning.

University of Durham

At a special convocation to be held in connexion with the centenary celebrations of this University on July 1st and 2nd the hon. degree of D.C.L. will be conferred on Sir Cuthbert Wallace, president of the Royal College of Surgeons of England.

British Homœopathic Congress

This meeting will take place at the Langham Hotel, London, W., on June 17th and 18th. Further particulars may be had from the secretary, 69, Elizabeth-street, London, S.W.1.

Bedminster Health Centre

The Lord Mayor of Bristol has opened a new health centre at Bedminster which provides all facilities for the supervision of the health of the pre-school and school child, and for the expectant and nursing mother. The routine medical inspections of school-children attending 24 neighbouring schools and the maternity and child welfare services for South Bristol and Knowle will be concentrated here.

Silicosis Symposium

The third Silicosis Symposium will be held at the Saranac Laboratory, Saranac Lake, N.Y., in connexion with the Trudeau School of Tuberculosis, from June 21st to 25th. The meeting will be opened by Dr. Leroy Gardner, director of the laboratory, and at the first session Dr. A. J. Lanza will read a paper on the significance of the silicotic problem and Dr. R. R. Sayers one on the ætiology of silicosis. Prof. Philip Drinker will also open a discussion on dust concentrations and their measurement. On the second day Dr. Gardner will give the opening address in a discussion on the pathology of the pneumoconioses, while Prof. W. S. McCann will speak on the physiology of the fibrotic lung. On June 23rd Dr. E. P. Pendergrass will discuss roentgenologic aspects of the normal and silicotic lung and Dr. H. L. Sampson the roentgenologic diagnosis of silicosis. On June 24th Dr. A. R. Riddell will read a paper on the clinical picture and diagnosis of silicosis with consideration of disability, and Mr. D. E. Cummings on the occupational history. Dr. Riddell and Prof. Drinker will afterwards discuss the control of the disease from the medical and engineering aspects. At the last session Mr. Cummings will consider the administrative aspects of silicosis and Mr. T. E. Water legislative control and compensation.

National Hospital for Diseases of the Heart

On Thursday, June 10th, at 5 P.M., at 1, Wimpole-street, London, W., Dr. C. Laubry, professor of cardiology in the University of Paris, will deliver the St. Cyres lecture of this hospital. His title will be Considérations Pathogéniques et Cliniques sur les Rhythmes de Galop.

British Social Hygiene Council

Prof. James Young, director of the department of obstetrics and gynæcology at the British Postgraduate Medical School, has been elected chairman of the medical advisory board of the Council in succession to Sir Farquhar Buzzard.

Research Defence Society

At a meeting of this society to be held at the London School of Hygiene, Keppel-street, London, W.C., at 3 P.M., on Tuesday, June 15th, Prof. Grey Turner will deliver the eleventh Stephen Paget memorial lecture. He will speak on what research owes to the Paget tradition.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, June 8th.

Therapeutics and Pharmacology. 5 P.M. Annual general meeting. Dr. A. Loeser (Freiburg): Hyperthyroidism and the Thyrotropic Hormone of the Pituitary.

FRIDAY.

Ophthalmology. 5 P.M. Annual general meeting. Mr. E. F. King: The Epithelial Growths of the Conjunctiva and Cornea.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY.

THURSDAY, June 10th—8.30 P.M. (11, Chandos-street, W.), Dr. T. A. Ross: The Psychological Approach.

KENSINGTON MEDICAL SOCIETY.

TUESDAY, June 8th.—8.30 P.M. (St. Mary Abbots Hospital, W.). Mr. V. B. Green-Armytage: The Value of Hystero-salpingography in General Practice.

SOUTH-WEST LONDON MEDICAL SOCIETY.

WEDNESDAY, June 9th.—9 P.M. (Bolingbroke Hospital, Wandsworth Common), Dr. C. E. Lakin: Physical Signs: Are They Worth While? (Bolingbroke lecture.)

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

TUBERCULOSIS ASSOCIATION.

THURSDAY, June 10th, FRIDAY and SATURDAY.—Annual Provincial Meeting at the Central Library, Manchester.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART.

THURSDAY, June 10th.—5 P.M. (1, Wimpole-street, W.), Prof. Ch. Laubry: Considérations Pathogéniques et Cliniques sur les Rhythmes de Galop. (St. Cyres lecture.)

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane-road, W.

TUESDAY, June 8th.—4.30 P.M., Dr. D. Hunter: Occupational Diseases.

WEDNESDAY.—Noon, clinical and pathological conference (medical). 2 P.M., Dr. Janet Vaughan: The Reticulocytes. 3 P.M., clinical and pathological conference (surgical). 4.30 P.M., Prof. M. Greenwood, F.R.S.: Experimental Epidemiology.

THURSDAY.—2.15 P.M., Dr. Duncan White: Radiological Demonstration. 3 P.M., operative obstetrics. 3.30 P.M., Mr. A. K. Henry: Demonstrations of the Cadaver on Surgical Exposures.

FRIDAY.—2.30 P.M., Mr. Russell Howard: Diseases of the Breast. 3 P.M., clinical and pathological conference (obstetrics and gynæcology).

Daily, 10 A.M. to 4 P.M., medical clinics, surgical clinics, and operations, obstetrical and gynæcological clinics and operations, refresher course for general practitioners.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

MONDAY, June 7th.—10 A.M., Dr. Post: X Ray Film Demonstration. Skin clinic. 11 A.M., surgical wards. 2 P.M., operations, surgical, and gynæcological wards, medical, surgical, and gynæcological clinics. 4.15 P.M., Mr. Green-Armytage: Abortion.

TUESDAY.—10 A.M., medical wards. 11 A.M., surgical wards. 2 P.M., operations, medical, surgical, and throat clinics. 4.15 P.M., Dr. Hugh Gordon: Treatment of Acne.

WEDNESDAY.—10 A.M., children's ward and clinic. 11 A.M., medical wards. 2 P.M., gynæcological operations, medical, surgical, and eye clinics. 4.15 P.M., Mr. Harvey Jackson: Diseases of the Rectum.

THURSDAY.—10 A.M., neurological and gynæcological clinics. Noon, fracture clinic. 2 P.M., operations, medical, surgical, genito-urinary, and eye clinics. 4.15 P.M., Mr. Simmonds: Pyloric Stenosis.

FRIDAY.—10 A.M., Medical Wards, skin clinic. Noon, lecture on treatment. 2 P.M., operations, medical, surgical, and throat clinics. 4.15 P.M., Mr. Vlasto: Hoarseness.

SATURDAY.—10 A.M., children's and surgical clinics. 11 A.M., medical wards.

The lectures at 4.15 P.M. are open to all medical practitioners without fee.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.

THURSDAY, June 10th.—2 P.M., Mr. T. Twistington Higgins: Examination of the Urinary Tract. 3 P.M., Dr. Alan Moncrieff: The Purpuras.

Out-patient clinics daily at 10 A.M. and ward visits at 2 P.M.

ST. MARY'S HOSPITAL, W.

TUESDAY, June 8th.—5 P.M. (Institute of Pathology and Research), Dr. Wilson Smith: The Influenza Problem.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.

WEDNESDAY, June 9th.—Visit to Ford Motor Works, Dagenham.

ASSOCIATION OF CLINICAL PATHOLOGISTS.

SATURDAY, June 12th.—9.30 A.M. (Royal East Sussex Hospital, Hastings), Discussion on Blood Transfusion and Saline Injections to be opened by Prof. A. E. Boycott, F.R.S. Subsequent speakers: Dr. H. F. Brewer: (Organisation: Medical Administration of a Voluntary Blood Transfusion Service); Dr. S. C. Dyke (Organisation of a Blood Transfusion Service); Dr. J. A. Boycott (Grouping of Donors and Recipients); Dr. H. L. Marriott and Dr. A. Kekwick (Continuous Drip Blood Transfusion); Dr. R. J. V. Pulvertaft (Abnormal Reaction following Blood Transfusion); Dr. P. Lazarus-Barlow (Direct Blood Transfusion); Dr. F. A. Knott (Transfusion in Aplastic Anæmia and Agranulocytosis); Dr. Norah Schuster (Storage of Blood); Dr. N. Hamilton Fairley (Intravenous Hæmolysis with Special Reference to Pseudo-Methæmoglobin Production); Dr. Robert Officer (Post-operative Saline Treatment). Dr. Janet Vaughan: Demonstration of Specimens from a Case of Osteosclerosis with Leucoerythroblastic Anæmia. Dr. Lazarus-Barlow: New Method of Filtering Agar Culture Media.

MANCHESTER ROYAL INFIRMARY.

TUESDAY, June 8th.—4.15 P.M., Dr. E. W. Twining: The Radiology of Intrathoracic Suppuration.

FRIDAY—4.15 P.M., Dr. Norman Kletz: Demonstration of Medical Cases.

Appointments

CARSON, JAMES, M.D. Belf., D.P.H., Deputy Medical Superintendent at Booth Hall Hospital, Manchester.

DONIACH, I., M.D. Lond., Clinical Pathologist to the Mount Vernon Hospital, Northwood.

GLASS, MARGARET A., M.B. Glasg., D.P.H., Assistant School Medical Officer for Barking.

HOGG, WILLIAM, M.B. Lond., D.P.H., Assistant Medical Officer of Health for Barking.

HULL, E. R., M.B. Belf., D.P.M., Deputy Medical Superintendent at Calderstones Certified Institution, Whalley.

LAURIE, J., M.B., M.R.C.P., F.R.C.S. Edin., Medical Superintendent at the Sharoe Green Hospital, Preston.

*O'KEEFFE, E. J., M.R.C.S. Eng., D.P.H., Assistant Medical Officer of Health for Stepney.

TOUGH, J. S., M.B. Edin., Surgical Registrar at Aberdeen Royal Infirmary.

British Postgraduate Medical School.—The following appointments are announced:—

CASTLEDEN, L. I. M., M.D. Lond., Demonstrator in Clinical Medicine;

HOFFMAN, H. L., M.B., M.R.C.P. Lond., Demonstrator in Clinical Medicine; and

KREMER, M., M.D., M.R.C.P. Lond., Demonstrator in Clinical Medicine.

Bristol Royal Infirmary.—The following appointments are announced:—

BUSH, G. B., M.B. Brist., D.M.R.E., Hon. Radiologist;

ADAMS, S. B., M.B. Brist., D.M.R., Hon. Radiologist; and

DUNLEVY, A. A., M.B. Dubl., D.M.R.E., Radiodiagnostician.

Certifying Surgeons under the Factory and Workshop Acts: Dr. H. MOIR (Currie District, Midlothian); Dr. G. O. TAYLOR (Dorchester District, Dorset); DR. ANDREW LAW, jun. (Kilbride District, Bute); Dr. A. E. STRUTHERS (Paisley District, Renfrew); Dr. W. E. IVERS (Youlgreave District, Derby); Dr. E. E. STEPHENS (Edgware District, Middlesex); Dr. J. B. DONALD (Stranraer District, Wigtown).

Medical Referee under the Workmen's Compensation Act, 1925: ATHOLL ROBERTSON, M.D., of Oban, Argyll, for the Oban Sheriff Court District (Sheriffdom of Argyll).

* Subject to confirmation.

Vacancies

For further information refer to the advertisement columns

Aberdeen Royal Infirmary.—Sen. Cas. O. for Out-patient Dept., £200.

Annie McCall Maternity Hosp., 165, *Clapham-road, S.W.*—Sen. and Jun. H.S.'s.

Ashton-under-Lyne District Infirmary.—Cas. H.S., £180.

Aylesbury, Royal Buckinghamshire Hosp.—Sen. Res. M.O., at rate of £200.

Barnsley, Beckett Hosp. and Dispensary.—H.S., £200.

Bath and Wessex Children's Orthopædic Hosp., Combe Park.—H.S., at rate of £120.

Bath, Royal United Hosp.—Hon. Asst. to Fracture Service. Also H.P., at rate of £150.

Battersea General Hosp., Battersea Park, S.W.—Res. H.P. and Cas. O., at rate of £120.

Bedford County Hosp.—Second H.S., at rate of £150.

Birmingham, Dudley-road Hosp.—Jun. M.O., at rate of £200.

Birmingham, Selly Oak Hosp.—Jun. M.O.'s, each at rate of £200.

Bolton Royal Infirmary.—H.P. and Two H.S.'s, at rate of £200 and £150 respectively.

Bradford Children's Hosp.—H.S., £150.

Bradford Royal Eye and Ear Hosp.—Two H.S.'s, each £180.

Brighton Municipal Hosp.—Third Res. Asst. M.O., £300.

Brighton, Royal Alexandra Hosp. for Sick Children.—H.P., £120.

Brighton, Royal Sussex County Hosp.—Hon. Surg. Reg. H.P., £150. Also Cas. H.S., £120.

Bristol General Hosp.—Two H.P.'s, Three H.S.'s, Res. Obstet. O., H.S. to Spec. Depts, each at rate of £80. Also Cas. H.S., at rate of £100.

British Postgraduate Medical School, W.—Three H.S.'s to Surgical Unit, at rate of £105.

Burnley Municipal General Hosp.—Jun. Res. M.O., at rate of £150–£200.

Canterbury, Kent and Canterbury Hosp.—Hon. Surgeon.

Cardiff, King Edward VII Welsh National Memorial Assoc.—Res. Asst. Tuber. M.O., £500.

Central Middlesex County Hosp., Willesden.—Visiting Ear, Nose, and Throat Surgeon, 3 guineas per session. Two Res. Asst. M.O.'s, each £400. Also Res. Cas. M.O., £350.

Cheltenham General and Eye Hosps.—H.P., £150.

Chesterfield and North Derbyshire Royal Hosp.—H.S., at rate of £150.

City of London Maternity Hosp., City-road, E.C.—Asst. Res. M.O., at rate of £80.

Colchester, Essex County Hosp.—H.S., £175.

Colonial Medical Service.—Associate Prof. of Medicine, Singapore, £1190.

Coventry and Warwickshire Hosp.—Res. H.S., Cas. O., and Res. H.S. to Aural and Ophth. Depts., each £150.

Croydon Mental Hosp., Upper Warlingham.—Asst. M.O., £400.

Derbyshire Hosp. for Sick Children.—Res. H.S., at rate of £130.

Derbyshire Royal Infirmary.—Cas. O. and Orthopædic H.S., £150.

Down County Mental Hosp., Downpatrick.—Jun. Asst. M.O., £350.

Dreadnought Hosp., Greenwich, S.E.—Receiving Room Officer, at rate of £200. Also H.P. and H.S., each at rate of £110.

Durham County Council.—Deputy County M.O.H., £960. Also Asst. Welfare M.O., £500.

East Ham Memorial Hosp., Shrewsbury-road, E.—Hon. Surgeon to Orthopædic Dept. Also two Anæsthetists, each 1 guinea per session.

Gloucestershire Royal Infirmary and Eye Institution.—H.P. and H.S., each at rate of £150.

Golden-square Throat, Nose, and Ear Hosp., W.—House Anæsthetist and H.S., £150 and £100 respectively.

Hampstead General and North-West London Hosp., Haverstock-hill, N.W.—Cas. Surg. O. for Out-patient Dept. and H.S., each at rate of £100.

Herefordshire General Hosp.—Res. Surg. O. and H.P., £150 and £100 respectively.

Hertford County Hosp.—Res. Surg. O., at rate of £250.

Heston and Isleworth Borough.—Asst. M.O.H. and School M.O., £500.

Holland (Lincolnshire) County Council.—Asst. M.O.H., £600.

Hosp. for Tropical Diseases, Gordon-street, W.C.—H.P., at rate of £120.

Huddersfield, St. Luke's Hosp.—Res. M.O., £200.

Hull Royal Infirmary.—Second H.P. and H.S. to Ophth. and Ear, Nose and Throat Depts., each at rate of £150. Also H.S. for Branch Hospital, at rate of £160.

Ilford, King George Hosp.—Two H.S.'s, each at rate of £100.

Institute for the Scientific Treatment of Delinquency, Portman-street, W.—Med. Reg., £300.

Ipswich, East Suffolk and Ipswich Hosp.—Cas. O., H.S. to Orthopædic and Fracture Dept., and H.S. to General Surgeon and Genito-Urinary Surgeon, each £144.

Jamaica, Lunatic Asylum.—Med. Supt., £750.

Kettering and District General Hosp.—Res. M.O. and Second Res. M.O., at rate of £160 and £140 respectively.

Lancaster County Mental Hosp.—Asst. M.O., £500.

Leicester Royal Infirmary.—Res. Radiologist, at rate of £200.

Liverpool County Mental Hosp., Rainhill.—Second Asst. M.O., £650. Also Asst. M.O., 7 guineas per week.

Liverpool, Hahnemann Hosp., Hope-street.—Res. M.O., at rate of £120.

London County Council.—Asst. M.O.'s (Grade I), each £350. Asst. M.O.'s (Grade II), each £250. Also Part-time M.O. for Ashford Residential School, £285.

London Jewish Hosp., Stepney Green, E.—Res. Cas. O., £100.

London University.—Laura de Saliceto Studentship, £150. Also Examinerships.

Maidenhead Hosp.—Res. M.O., at rate of £150.

Manchester, Ancoats Hosp.—H.S. to Ear, Nose, and Throat Dept., at rate of £100.

Manchester and Salford Hosp. for Skin Diseases.—H.S., at rate of £150.

Manchester, Booth Hall Hosp. for Children.—Res. Surg. O., £400.

Manchester Ear Hosp., Grosvenor-square.—Res. H.S., £120.

Manchester Park Hosp., Davyhulme.—Second Res. M.O., at rate of £225.

Manchester Royal Children's Hosp.—Sen. M.O., £300.

Manchester Royal Infirmary.—Jun. Asst. M.O. (Locum) to Radiological Dept., 8 guineas per week.

Manchester, St. Mary's Hosps.—H.S.'s, each at rate of £50.

Manchester, Withington Hosp.—Res. Obstet. O., £350. Also Res. Asst. M.O., at rate of £200.

Marie Curie Hosp., 2, Fitzjohn's-avenue, N.W.—Asst. Director.

Middlesbrough, North Riding Infirmary.—Sen. H.S. and Third H.S., at rate of £175 and £140 respectively.

National Temperance Hosp., Hampstead-road, N.W.—Cas. O., at rate of £120.

Newcastle General Hosp.—Two H.S.'s and H.P., each at rate of £150.

Newcastle-upon-Tyne, Barrasford Sanatorium.—Res. Med. Asst., £250.

Newport, Mon., Royal Gwent Hosp.—Two H.S.'s, each at rate of £135.

Norwich, Jenny Lind Hosp. for Children.—Res. M.O., £120.

Norwich, Norfolk and Norwich Hosp.—Two General H.S.'s, each £120.

Nottingham County Council.—H.S. for City Hosp., at rate of £250.

Nottingham General Hosp.—Res. Cas. O. and H.S. to Ear, Nose, and Throat Dept., each at rate of £150.

Paddington Green Children's Hosp., W.—H.S., at rate of £150.

Penshurst, Cassel Hosp. for Functional Nervous Disorders, Swaylands.—Medical Director, £1200–£1500.

Plymouth City Hosp.—Deputy Med. Supt., £450.

Plymouth, Prince of Wales's Hosp., Devonport.—Jun. H.S., at rate of £120.

Pontefract General Infirmary.—Jun. Res. M.O., at rate of £150.

Preston County Borough.—Asst. School M.O., £500.

Princess Louise Kensington Hosp. for Children, St. Quintin-avenue, W.—H.S., at rate of £120.

Putney Hosp., Lower Common, S.W.—Jun. M.O., at rate of £100.

Reading, Royal Berkshire Hosp.—Res. Cas. O., at rate of £150.

Richmond, Surrey, Royal Hosp.—Jun. H.S., at rate of £100.

Rotherham Hosp.—H.S. for Ophth. and Ear, Nose, and Throat Depts., £120.

Royal Northern Hosp., Holloway, N.—H.S., at rate of £70.

St. Helens County Borough.—Asst. M.O.H., £500.

St. Pancras Metropolitan Borough.—Asst. M.O. for Antenata Clinic, 1½ guineas per session.

St. Peter's Hosp. for Stone, &c., Henrietta-street, W.C.—Clin. Assts. to the Hon. Staff.

St. Thomas's Hosp., S.E.—Physician.

Salford, Hope Hosp.—Asst. Res. M.O., at rate of £200.

Salford, Infectious Diseases Hosp.—Jun. Asst. Res. M.O., £200.

Salford Royal Hosp.—Two H.S.'s, each at rate of £125.

Salisbury General Infirmary.—Res. M.O., £250. Also H.P., at rate of £125.

Sheffield Children's Hosp.—H.S., £100.

Sheffield, Jessop Hosp. for Women.—Asst. in Hosp. Labs., £300. Res. M.O. and Sen. Res. O., each at rate of £150. Also Three H.S.'s, each at rate of £100.

Sheffield Royal Infirmary.—Ophth. H.S., at rate of £120. Also H.S. and Aural H.S., each at rate of £80.

Southampton, Royal South Hants and Southampton Hosp.—Cas O., and Res. Anæsthetist and H.S. to Ear, Nose, and Throat Dept., each at rate of £150.

Southend-on-Sea General Hosp.—Res. Obstet. O., at rate of £100.

Southern Rhodesia Medical Service.—Government M.O., £600–£750.

South London Hosp. for Women, Clapham Common, S.W.—Surg. Reg., £75.

Stafford, Prestwood Sanatorium.—Jun. Asst. M.O., at rate of £300.

Stepney Metropolitan Borough.—Asst. Tuber. O., £600.

Stoke-on-Trent, Burslem, Haywood, and Tunstall War Memorial Hosp.—Res. H.S., at rate of £175.

Stoke-on-Trent, Longton Hosp.—H.S., £160.

Stoke-on-Trent, North Staffordshire Royal Infirmary.—H.S. for Aural and Ophth. Dept., at rate of £150.

Surrey County Council.—Jun. Asst. M.O. for County Sanatorium, at rate of £350.

Surrey County Hosp., Redhill.—Res. Asst. M.O., at rate of £375.

Swansea County Borough Mental Hosp.—Asst. M.O., £400.

Swansea General and Eye Hosp.—H.S., at rate of £150.

Taunton, Somerset and Bath Mental Hosp.—Res. Second Asst. M.O., £350.

Tilbury Hosp., Essex.—H.S., at rate of £140.

Wakefield, Clayton Hosp.—Sen. H.S., £250.

Watford and District Peace Memorial Hosp.—H.S., at rate of £150.

Wembley Urban District Council.—Asst. M.O.H., £500.

West London Hosp., Hammersmith-road, W.—Jun. Asst. M.O. for V.D. Dept., £350. Also H.P. and Two H.S.'s, each at rate of £100.

Willesden General Hosp., Harlesden-road, N.W.—Cas. O., at rate of £100.

Winchester, Royal Hampshire County Hosp.—H.S., £125.

Worcestershire Mental Hosp., Barnsley Hall.—Deputy Med. Supt., £450.

Worksop Victoria Hosp.—Jun. Res., £130.

York, Bootham Park Mental Hosp.—Med. Supt., £800.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Plympton (Devon) and Folkestone (Kent).

NOTES, COMMENTS, AND ABSTRACTS

REFUGEES AT AN ENGLISH PORT

As medical officer of health for Southampton, Dr. H. C. Maurice Williams sends us a lively account of the arrival there on May 22nd of the Spanish liner *Habana* with 4056 refugees from Bilbao. At 5 P.M. on the Saturday the ship was signalled off the Needles, and the port sanitary staff, accompanied by customs and immigration officials, left the docks in the port sanitary launch to board her as arranged. Another launch followed with supplies of milk, glucose, meat extracts, and medical requisites.

"It was an extraordinary spectacle," Dr. Williams writes, "to see a vessel, normally capable of carrying between 400 and 500 passengers, steaming up Southampton Water with every inch of her decks covered with human beings. Even more extraordinary were the conditions found on board. Children all herded together in the public rooms, in the alleyways, and on all the decks. Some were lying rolled in blankets, others running about the ship screaming, and a few, cool and complacent, appeared to accept the circumstances of their arrival in a strange land, having been parted from their parents, without any emotion. It was with some difficulty that we were able to reach the ship's hospital to see a boy of 12 who, later the same evening, was removed by launch and ambulance to the borough hospital for an operation on a strangulated testicle."

The ship was permitted to proceed to an inner mooring station next morning for a detailed medical inspection of all persons on board. On the Sunday morning hundreds of the public, with press representatives and photographers, had collected along the quay, but no one without an official pass issued by the port sanitary department was permitted to approach the ship's berth or go on board. The names and addresses of all who were given these official passes were recorded, in order that the health authorities throughout the country might keep them under a surveillance in the event of any major infection being discovered amongst the persons on board. The adults accompanying the children were first examined. The saloons were then cleared of all except those taking part in the medical and immigration inspection, and within half an hour the children were lined up in queues and the inspection began.

"Nine medical officers of the department, each in a separate screened cubicle, took up their positions in the line of the queue. A health visitor assisted each doctor by stripping the children to the waist. The child was then examined, special attention being paid to an examination of the eyes for trachoma, the head for ringworm, lice, or nits, and the skin for rashes and lice. The heart and lungs were also examined in detail to decide on those fit to live under canvas.

"On completion of the examination, each child was dressed by a health visitor and passed on in the queue to a sanitary inspector, who stamped the identification card attached to each child, indicating that the child had been medically examined. In addition, he also tied a coloured tape on the child's left wrist, which served as a code as to the destination of the child. White tape indicated 'clean' and allowed the child to proceed direct to camp. Red tape indicated 'verminous' and to proceed to the corporation baths for de-lousing. Blue for 'infectious or contagious' conditions to proceed to the isolation hospital or other institution. Blue and white tapes for any other condition requiring general hospital treatment.

"After the medical inspection was completed, each child was passed on to the immigration officer, who stamped the disc with his official stamp, and the child then proceeded down the main gangway, at the foot of which sanitary inspectors and health visitors collected them into groups according to the colour of the tapes, and arranged for their immediate disposal in the following ways: Clean children went direct by motor omnibuses to the camp. Verminous children were taken in lorries to the corporation baths for de-lousing, and the hospital cases were transported by the corporation ambulances to the appropriate institutions."

Many of the children were thin, but the general impression gained, especially before they stripped, was that they were, for the most part, an alert, intelligent group of children, who "compared favourably in physique with our own children." The clothing generally was very good, and when the clothing of the verminous ones was taken away from them for disinfection many of them wept.

"At the corporation baths we were allowed to use 40 of the slipper baths, and with the assistance of many voluntary and willing helpers, together with twelve barbers, 712 of the children were de-loused and fitted with complete sets of clothing, the latter being supplied by the Spanish Relief Committee."

At 7 P.M. on the Sunday medical inspection ceased for the day. The medical staff had worked continuously for ten hours and had disposed of 3278 children. On the following morning the remainder were examined and completed by 11 A.M.

DR. RIADORE AND THE EFFECTS OF SPINAL IRRITATION

Mr. D. C. Thomson, writing from the registered office of Osteopathic Trusts Ltd., complains that in the opening sentence of an annotation entitled "What is Osteopathy?" in our issue of April 10th we pled its American origin to discredit this theory of healing. He goes on to say: "... although Still began to elaborate on his initial heresy at the end of the nineteenth century, a British doctor preceded him in a tentative announcement of similar conclusions. Many years earlier, namely in 1842, was published in England an interesting suggestive treatise on Irritation of the Spinal Nerves as the source of Nervousness, Indigestion, Functional and Organical Derangements of the Principal Organs of the Body by J. Evans Riadore, M.D., 'and of the Royal College of Surgeons, London.' In this book the author discusses 'a lengthened catalogue of maladies which are either engendered by, continued by, or the consequence of either spinal irritation or inflammation, with or without curvatures of the spinal column—a class of disease of no small importance, whether we regard their frequency or the suffering and danger which attend them, the nature of which, in consequence of our erroneous views of the animal economy, has been overlooked, and the sufferer thus deprived of all chance of effectual assistance from our art.'"

Dr. Riadore's name appears in the London Medical Directory for 1846 with the qualifications M.D. Giessen and M.R.C.S. (April 4th, 1817), and an address at 73, Harley-street.

NEW PREPARATIONS

EXAMEN.—What is described as "the purest and most highly concentrated liver extract ever achieved on a manufacturing scale" has been put on the market by Glaxo Laboratories Ltd., Greenford, Middlesex. On Jan. 16th last, in our correspondence columns, Laland and Klem, of Oslo, described this product and mentioned that it would be made available shortly. Each 2 c.cm. ampoule is said to contain, in an average of 10–15 mg. of solids, the hæmopoietic factor extracted from 100 g. of fresh liver. The initial dose in relapse is given as 4 c.cm., by injection, and the maintenance dose, at fortnightly intervals, as 2 c.cm. It is claimed that Examen does not cause pain after injection, and does not give rise to allergic reactions. It can be administered intravenously in emergency.

NAVIGAN.—Last year we published reports on the use of Syntropan with Sedormid as a preventive and remedy for sea-sickness (*Lancet*, 1936, **1**, 226, 1263). Syntropan (a diethylaminodimethylpropanol ester of tropic acid) is a synthetic antispasmodic substance, related to atropine, which depresses the action of the vagus, and especially its action on the

digestive tract. Sedormid, the sedative experimentally associated with it, has now been replaced by a pyridine derivative chemically known as dihydroxy-diethylpiperidine, which is described as a mild sedative-hypnotic having pharmacological properties resembling those of carbromalum B.P. The manufacturers, Roche Products Ltd. (51, Bowes-road, London, N.13), call their new syntropan preparation Navigan and recommend it both for the prevention of travel-sickness (air, sea, train, car) and, more tentatively, as an antispasmodic in abdominal colic. Navigan is given by mouth in small tablets, or, if need be, in suppository form. Accounts of its use at sea have been encouraging.

"WELLCOME" BRAND WHOOPING-COUGH VACCINE. In issuing their vaccine made from recent strains of *Hæmophilus pertussis* (Bordet-Gengou bacillus) Burroughs Wellcome and Co. point out that there is no satisfactory laboratory test for potency and that batches of vaccine made in different parts of the world may not all be effective in preventing whooping-cough. In the attempt to secure immunity against this serious disease inoculation in infancy is advised, preferably between the 7th and 10th months. Kendrick and Elderling's technique comprises five subcutaneous injections (at weekly intervals) with a total of 70,000 million organisms: Madsen gives less and Sauer more. The reactions seem to be somewhat more troublesome than those of anti-diphtheria immunisation, especially in older children. If the vaccine is used for treatment—on which opinions differ—it should be used early. It is prepared at the Wellcome Physiological Research Laboratories, Beckenham, Kent.

FOLINERIN is a crystalline glucoside obtained from the leaves of the oleander shrub (*Nerium oleander*) and marketed by Schering Ltd., 185, High Holborn, W.C.1. It is intended for administration, by mouth, in cases where digitalis would normally be given but a more rapid and constant action is desirable. It is said to be a more powerful diuretic than digitalis and to have a more persistent action on the heart. Stability towards acids prevents its decomposition in the stomach, and as a rule it causes no nausea.

KINOO PURE SILK BABY POWDER.—The manufacturers, Kinu Ltd. (6, Finsbury-square, E.C.3), state that every tin of their Kinoo Baby Powder contains at least 90 per cent. of pure cocoon silk, with about 5 per cent. of boric acid and 5 per cent. of zinc oxide. The powder is soft and silky to the touch, as might be expected from its origin, and it is said to be free from the disadvantages sometimes attached to talc, chalk, starch, kaolin, and other substances often applied to the skin. Among its virtues are "great absorbency without the possibility of fermentation, dissolution, or the formation of a smeary paste."

ZEPHIRAN CONCENTRATE is a new antiseptic made by Bayer Products Ltd. (Africa House, Kingsway, W.C.2). It is described as a watery solution of a mixture of alkyldimethylbenzylammonium chlorides, forming a faintly perfumed colourless fluid which does not stain clothes or dressings. Subcutaneous and intracutaneous injections of a 1 in 100 dilution into the ear and abdominal skin of a rabbit are stated to cause no irritation of the tissues, and rabbits tolerate 3–5 c.cm. per kg. of body-weight, taken by mouth. Tests at a London teaching hospital have shown a Rideal-Walker coefficient (*Bacillus typhosus*) of 7·5, but the action of the disinfectant for certain other organisms is relatively greater, and comparable figures for hæmolytic streptococci, *Staphylococcus aureus*, and pneumococci are given as 27, 31, and 137 respectively. In concentrations up to 1 in 500 Zephiran Concentrate makes a strong lather and no soap need be employed when it is used for disinfection of the hands. When it is employed for sterilising instruments anti-rust tablets should be added, and these are supplied free on demand. The manufacturers claim that even when it is diluted with equal parts of serum their antiseptic retains very considerable bactericidal power.

Wishing to show that BISODOL is more than a crude mixture of its component parts, the makers (Bisodol Ltd., 12, Chenies-street, W.C.1) invited us to see its manufacture. The ingredients are sodium bicarbonate, light magnesium carbonate, and bismuth subnitrate, with the ferments diastase and papain, and special attention is paid to their subdivision in the powder, for on this depends the uniformity of the suspension formed when water is added. After a preliminary mixing the powder materials are passed through a fine-mesh silk screen into a mixing chamber, where they are stirred with revolving blades for two hours. Peppermint oil is here added in a fine spray from an atomiser.

BISMUTH THERAPY: CORRIGENDUM.—In a note published on May 22nd reviewing a booklet issued by Pharmaceutical Specialities (May and Baker) Ltd., reference is made to a technique for intravenous injection of bismuth. Actually the technique described was for *intramuscular* injection, its object being to ensure that the needle is *not* in a vein, and the manufacturers did not suggest that bismuth can be given by the intravenous route.

MENTAL HYGIENE CONGRESSES IN PARIS.—The second International Congress on Mental Hygiene will be held in Paris from July 19th to 24th under the presidency of Dr. Edouard Toulouse. The congress will meet at the Centre Marcelin-Berthelot, Maison de la Chimie, 28 bis, rue Saint-Dominique, Paris, VII. Copies of the final programme of the meeting may be had from the secretary of the National Council for Mental Hygiene, 76, Chandos-House, Palmer-street, London, S.W.1.

From July 24th to August 1st the first International Congress of Child Psychiatry will meet at the same place. The inaugural address will be given by Prof. H. Wallon, who will speak on the neurophysiological principles of child psychiatry. Other subjects which will be discussed are: conditioned reflexes in child psychiatry, methods of education according to disturbances of intelligence and character in children, and mental debility as a cause of delinquency in children and adolescents. Further information may be had from Dr. Grimbert, 11 rue Duroc, Paris, VII.

Births, Marriages, and Deaths

BIRTHS

HYATT.—On May 21st, at Evercreech, Somerset, the wife of Major J. W. Hyatt, R.A.M.C., of a son.

JACKSON.—On May 23rd, at Devonshire-place, W., the wife of Mr. Harvey Jackson, F.R.C.S., of a son.

PANTIN.—On May 25th, at Bentinck-street, W., the wife of Dr. Guy Pantin, of a daughter.

MARRIAGES

GOADBY—BOGGON.—On May 22nd, at Winchester Cathedral, Hector Kenneth Goadby, M.D., F.R.C.P., only son of Sir Kenneth Goadby, K.B.E., and Lady Goadby, to Margaret Evelyn, daughter of Mr. R. O. Boggon, O.B.E., of Worthing, formerly of H.M. Dockyard, Portsmouth.

DEATHS

COLLINS.—On May 24th, at Manor Park, E., Richard Hawtrey Collins, M.D. Brux., M.R.C.S. Eng., aged 74.

HUGILL.—On May 26th, at Streatham Park, S.W., George Frederick Hugill, M.D. Durh.

KEMBER.—On May 20th, at Edinburgh, Arthur Thomas Kember, F.R.C.S. Edin., for many years medical missionary at the C.M.S. Hospital, Hang-chow, China.

LANGTON.—On May 27th, following an operation, in Kampala, Edward Athol Clarence Langton, M.R.C.S. Eng., Uganda Medical Service, aged 48.

LEE.—On May 26th, in London, William Emerson Lee, M.D. Camb., of The East Sussex Club, St. Leonards-on-Sea, aged 61.

PAULSON.—On May 29th, at Heybrook Bay, near Plymouth, William Paulson, L.R.C.P. Lond., late of Mountsorrel, Leicestershire, and Dartmouth, in his 95th year.

SHORNEY-WEBB.—On June 1st, at the Middlesex Hospital, C. H. Shorney-Webb, M.S., F.R.C.S.

WALLER.—On May 29th, at Stroud, Glos, Alfred Whalley Waller, M.D. Durh., M.R.C.S. Eng.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.